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CASES OF TEMPORARY BLINDNESS DURING LACTATION.

By E. Nettleship.

Cases in which failure of sight in greater or less degree occurs in direct relation with child-bearing are well-known. Most of them can easily be shown to be examples of retinitis associated with the albuminuria which is not uncommon in the later months of pregnancy, and except in regard to the comparatively favourable prognosis both for sight and for life which they present, these cases differ in no way from the common albuminuric retinitis of chronic renal disease. When recovery has taken place after an attack of the albuminuric retinitis of pregnancy, the residual changes seen on ophthalmoscopical examination generally enable us to pronounce with tolerable certainty on the character of the past disease of retina and optic nerve; and we know too well that if the woman who has gone through such an attack becomes pregnant again she is liable to a second and worse visitation both of renal symptoms and of retinitis, during which she is very likely

to die. When, however, the albuminuria and its consequent retinal disease comes on in the last pregnancy, recovery both from the blindness and the albuminuria may be permanent, or at any rate life may last for several years.

Other cases are seen, much less frequently, where blindness is due to severe loss of blood in the confinement; and these, in which one eye often suffers much more severely than the other, differ, so far as I am aware, in no respect from the well-known group of blindness from acute anæmia.

It is not necessary to quote examples of either of the two classes just mentioned. But we meet with a few instances of women who become blind, or nearly blind, shortly, but not immediately, after the birth of a child, in circumstances which cannot be explained either by loss of blood or renal disease, and which can also be readily distinguished from mere failure of accommodation from enfeebled health. I do not know whether these cases have been recorded in a group by other observers; but in any case they are, I think, sufficiently uncommon to excuse the publication of the examples given below. I have never seen one of these patients during the time of the blindness, and observations are much to be desired in that stage; the after-appearances in several of the cases I have seen point, however, with more or less certainty to the previous occurrence of optic neuritis, and it is probable that neuritis may have occurred even in those where the discs and retinæ have appeared quite healthy several years after the attack. On the whole, therefore, whilst waiting for the proof which only observations made during the blindness can afford, we may fairly assume that these rare cases are to be grouped rather with the optic neuritis which is sometimes seen in chronic anæmia than with any forms of neuro-retinitis caused by the retention of injurious substances in the blood.

CASE 1.—*Total blindness for several weeks during lactation. Permanent recovery on weaning the baby. Appearances of past optic neuritis found many years afterwards.*

Mrs. W. (P. 15, 238), now about 53, gave me the following account of her sight failing for several weeks many years ago.

About three months after the birth of her second baby her sight failed in both eyes, and she was totally blind for several weeks. The failure was gradual, or at any rate not sudden. Sight gradually returned, and in about three months she could again see as well as ever. She gives a perfectly clear account of having been in total darkness for several weeks before sight began to return; unable to tell whether the room was light or dark; unable to see her husband, or her baby, or her food. She was greatly alarmed by the loss of sight; and, except that she was suckling her baby when the symptoms began, she seems to have been quite well. There had been no flooding, or other cause of acute exhaustion, and the failure did not begin till she had been suckling for about three months. She weaned her baby when she became blind, and has never suckled another, and her sight has remained good. For some reason, which I did not learn, she had not been allowed to suckle her first baby, and it had died, as she believed, from inefficient wet-nursing. It was this that determined her to suckle the second baby; and with the result above described.

She is now a healthy lady, quiet, sensible, and not in the slightest degree neurotic or fanciful. Her sight is quite good in each eye, and the refraction normal. The right O.D. is rather pale, and slightly misty all over, as if it had formerly been inflamed; but the left O.D. shows no departure whatever from the healthy appearance; the retinal vessels are quite natural in each eye.

CASE 2.—*Temporary failure of sight after first confinement. Failure again after second confinement sixteen months later, not followed by improvement. Appearances of post-neuritic atrophy several months afterwards.*

Henrietta J. (T., O.P. 3, p. 106) was married at the age of 28, and had her first child about nine months afterwards, in

December, 1878; there was no flooding, and the labour seems to have been natural, but the child was six weeks before time and did not live. Very shortly after the confinement her sight failed in both eyes, and at about this time, or rather before, she had some headache, principally occipital. The sight continued bad for three weeks or more, and then recovered perfectly, as she believed.

Her second child was still-born at about the end of the seventh month, in April, 1880. Her sight had begun to fail again a week before the labour, and within a day or two of that event had become so bad that she could not see her doctor's face, and could not see to do anything for herself. There was no flooding or other complication at or after the parturition. This time her sight did not return, or improved but very little; and when she came to St. Thomas's Hospital in September, 1880, aged 31, she could see only $\frac{20}{200}$ and 20 J. with the right, and not quite so well with the left; there was slightly defective perception of green, but only for pale shades; the discs were atrophied, and showed decided, though not gross evidences of previous papillitis; the arteries were more shrunken in left than in right; pupils moderately active to light, measuring about 5 mm.

There were no signs of cerebral tumour or of spinal cord disease, and no history or evidence of syphilis could be obtained from her husband; but there was a history of a fall on the back of her head some two or three years before her first child was born. The woman herself attributed the premature birth of her first child to her slipping off a chair, and that of the second child to her having taken a long walk (14 miles) a fortnight previously. Unfortunately, no mention is made of any examination of the urine; but the appearances of the fundus were in no way suggestive of previous renal retinitis, nor was the history of the mode or period of failure of sight at all like that due to the albuminuria of pregnancy. The facts, as stated by the patient and her husband, were fully confirmed by her medical attendant, Dr. W. D. Strang, of Penge, who was kind enough to write to me fully about her case.

On November 19th, 1891, Dr. Strang, at my request, sent Mrs. J. to see me again. She is now in good health and has a

good colour. The eyes and sight are just as they were in 1878, V. being $= \frac{6}{60}$ and 20 J.; O.Ds. and vessels as before. There have been no attacks of blindness since the one in April, 1880, though there have been four pregnancies since then. She says that she used to have bad headaches before marriage, but appears to be very little troubled in that way now.

She has had six pregnancies, and only one (No. 4), has given a living child, now æt. 8 and reported in good health. Of the other five, three resulted in premature and almost still, births, and two in miscarriages. The suspicion that she has been syphilitic is therefore stronger than I at first thought; but the eye symptoms are not attributable to any form of ordinary syphilitic disease of optic nerves or retinæ.

CASE 3.—*Loss of sight from long suckling, combined with great privation and anxiety. Complete recovery after removal of the cause. No ophthalmoscopical changes left.*

Mrs. B. (P. 8, 71) lost her sight for a considerable time when she was suckling her fifth baby. She was 27 years old, and had had her children rather quickly. When her sight failed she was in India with her husband, an officer, during and in the midst of, the Mutiny, and was undergoing great privation and anxiety; and she had besides been suckling for no less than eighteen months. She was able to get to England and to wean the baby, soon after the sight failed. The power of sight gradually returned, and became so good and strong that she was able to do fine lace-work again for years without glasses.

The blindness does not seem ever to have been complete as it was in Case 1; she said that everything was in a white mist, and that she could not see peoples' faces or other objects at all clearly. So far as I could ascertain, sight was affected equally for distant and near objects.

I saw her in 1883, when she was 53, she had been wearing glasses since she was 39, and now had + 2·75 D. There was H. 0·5 D. in the right eye, and H. 1 D. in the left, with normal acuteness of V. in each, and Pr. not in advance of her age. The ophthalmoscopical appearances were quite normal in both eyes.

CASE 4.—*Blindness for many weeks during the fifth lactation. Recovery without visible changes at the fundus.*

Elizabeth B. (T., O.P. 3, p. 200), married when she was 20. At the age of 29, when she had been suckling her fifth baby for three months, both eyes failed and she was "blind" for eight weeks, *i.e.*, she could not see her way about; the left failed a week before the right. Her sight returned and became as good as ever. When the sight failed, she considered her health to be quite satisfactory, and there had not been either flooding, dropsy, fever, or fits. Evidently, however, she was far from strong, for when she visited the hospital about her sight, she became so ill afterwards with vomiting and pain at the back of the head, that she could not attend again. The notes of that visit have unfortunately been lost, and the account given above was obtained when she came again a year later.

At the date of the latter visit, October 11th, 1881, she was again suckling a baby three months old, her sixth; she was suffering from asthenopia and some aching over the eyes, but there were no serious symptoms, and the ophthalmoscopical appearances were quite natural. Though there was no history of any previous inflammation of the eyes, one pupil showed marks of past iritis; and as there was a history of bad thrush in one of the children now æt six, and in the baby, it is likely that she had had syphilis several years before the attack of temporary blindness. She was a rather delicate-looking woman.

The following example of loss of sight in acute anæmia is given as illustrating the not very usual results of perfect recovery from that form of blindness without visible changes, followed by a slight relapse under similar circumstances many years later.

Blindness after acute loss of blood at the age of 19 *: recovery. Slight, temporary failure of sight many years afterwards from a similar cause.*

Mrs. E. (P. 13, 24), aged 49, was sent to me for opinion by the late Dr. Wilson Fox. A fortnight previously, shortly after a severe menstrual flooding, during which she had not had

her usual opportunities for keeping quiet, she had wakened one morning with her sight very dim. A trace of albumen in the urine and high arterial tension, had led to the suspicion of renal disease. The mistiness of vision had gone off when I saw her, and with her M. of 1 D. corrected, she saw $\frac{6}{9}$; the O.Ds. were rather pale (she was anæmic), but there were no more definite changes.

It is impossible to say what organic change, if any, occurred when her sight became dim; that the symptom was due either to mere retinal exhaustion or fatigue of accommodation is unlikely, because it was first noticed on waking up in the morning. However this slight failure might be accounted for, functional exhaustion alone could hardly be held to explain the much more serious attack of which she gave the following account:—When she was 19 she had a very severe flooding, and was expected to die; for weeks after the loss of blood, she was nearly blind, and could not tell the difference between the gravel walk and the grass; she was seen by a well-known ophthalmic surgeon in London, and her sight gradually and completely recovered. It is not improbable that acute neuritis or neuro-retinitis occurred at this time; but if so, the very complete restitution of the optic discs to the appearances of health is somewhat remarkable, not being the rule in neuritis from acute anæmia.

SARCOMA OF THE UVEAL TRACT, WITH NOTES OF ONE HUNDRED AND THREE CASES.

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AND

E. Treacher Collins,

Curator of the Museum.

We have tabulated in this paper 103 cases of undoubted sarcoma of the uveal tract. The patients were, with few exceptions, treated in Moorfields Hospital, and the examination of all the specimens was conducted in the hospital laboratory by the Curator for the time being. A considerable number included in our list have been already published in the Ophthalmic Hospital Reports by Messrs. Nettleship, Brailey, Milles, and the writers; in all such instances a reference to the volume and page is given in the last column of the tables.

Our chief object has been to obtain evidence regarding the important question of prognosis in this affection. It seemed not improbable that the figures furnished by an analysis of a number of unselected cases at one hospital would be more accurate than those obtained by collecting and analysing a large number from various sources. The fact that considerable differences exist in already published statistics tends to support this view.

In endeavouring to trace the after-history of patients we have on several occasions received material help from

medical men, to whom we desire to express our thanks. To the following gentlemen we are especially indebted: Messrs. Tweedy, Brailey, Reginald Clarke, E. W. Goodall, Groome (Stowmarket), Hodges (Leicester), Howlett (Hull), and Price (Reading),

The ultimate result in a certain number of the cases was ascertained by reference to the death register at Somerset House.

Under the following headings are given the figures obtained by analysis of the tables, and generally a comparison with those reported by previous writers:—

Sex of Patients.

Of the total number, 103, there were:—males, 59 or 57·28 per cent.; females, 44 or 42·71 per cent.

The slight preponderance of males corresponds fairly closely with that in the much larger number of cases collected from various sources and published by Fuchs; his figures are (of 259 cases), 137 males; 116 females; 6, sex not specified. His percentages are (in 253 cases), males, 54·15 per cent.; females, 45·84 per cent.

Although the proportion of cases in the two sexes varies somewhat in different records, we have only met with one in which the percentage was higher among females. In this paper, by Martin, 43 cases are reported, of which 29 occurred in women.

In the collected cases of primary sarcoma of the iris, on the other hand, the percentage has been larger in the female sex. In Pflüger's 23 cases there were 15 females, 8 males. In 18 cases collected by Treacher Collins 10 were females, 7 males, and in 1 the sex was not stated.

In the 6 cases of ciliary body tumours included in our list, the proportion is equal in the two sexes. Of 17 cases published by Mules (in which are included three of the cases in our tables) 14 were females, 3 males.

Age of Patients.

The average age of all our cases is 48·42 years. The youngest was a girl æt. 15 (Case 72 in tables), the oldest a man æt. 84 (Case 29).

Fuchs' average was 44·2. Freudenthal's, 49·4.

When arranged in decades we find the largest number occurring between 40 and 50 years of age.

Between 10 and 20 years, there were—	Males, 0.	Females, 3.	Total, 3.
„ 20 and 30 „ „	„ 3.	„ 4.	„ 7.
„ 30 and 40 „ „	„ 8.	„ 11.	„ 19.
„ 40 and 50 „ „	„ 17.	„ 10.	„ 27.
„ 50 and 60 „ „	„ 11.	„ 11.	„ 22.
„ 60 and 70 „ „	„ 13.	„ 3.	„ 16.
„ 70 and 80 „ „	„ 6.	„ 2.	„ 8.
„ 80 and 90 „ „	„ 1.	„ 0.	„ 1.
	„ 59.	„ 44.	„ 103.

Eye affected.

Right eye, 41; left eye, 60; not stated, 2; total, 103.

Fuchs' figures are, right eye, 108; left eye, 101; both eyes, 5; not stated, 45; total, 259.

Martin gives, right eye, 15; left eye, 19; not stated, 9; total, 43.

Freudenthal found, right eye, 10; left eye, 14; total, 24.

Tension at the time of Operation.

T. noted as normal	in 22 cases.
„ „ increased	in 57 „
„ „ diminished	in 7 „
„ not noted	in 17 „
Total ...	103

Of the 17 in which there was no note of tension 13 were cases with extra-ocular growths.

If the cases with normal and diminished tension be

added together and compared with those with increased tension, it is found that (of those which have been traced) 34 per cent. of the former group are dead and 50 per cent. of the latter.

If to the cases with increased tension we add those in which tension was not noted because of extra-ocular growth, we find that (of the traced cases) 58·19 per cent. are dead.

In 21 cases in which metastasis occurred, ocular tension at the time of excision was increased in 13, normal in 3, diminished in 1, and not noted in 4, in 3 of which the tumour had perforated the ocular tunics.

In 24 cases Freudenthal found tension increased in 15, normal in 8, diminished in 1.

Operation.

In 85 cases	enucleation.	
,, 5 ,,	,,	with removal of orbital contents.
,, 7 ,,	,,	was performed, and chloride of zinc paste applied.
,, 4 ,,	,,	and subsequent removal of a recurrent growth.
,, 1 case	,,	and resection of the optic nerve.
Total 103 cases		

Site of Growth.

In 6 of the 103 cases (Nos. 10, 24, 65, 68, 74, 96) the ciliary body was, as far as could be ascertained, the primary seat of the new growth.

In 2 cases (Nos. 26 and 72) the choroid and ciliary body were involved, and in one case (No. 73) the growth originated in the iris.

In the remaining cases, 94 in number, the tumour started in the choroid posterior to the ciliary body.

Martin, in 43 cases, classifies 38 as tumours of choroid, 4 as tumours of ciliary body, 1 as tumour of iris.

Fuchs, in 259 collected cases, gives sarcoma of iris, 16; sarcoma of ciliary body, 22; sarcoma of choroid, 221.

In 21 cases (Nos. 2, 3, 5, 6, 8, 9, 11, 15, 31, 34, 40, 47, 62, 63, 64, 66, 67, 83, 88, 90, 95) the tumour had extended through the sclerotic, and extra-ocular nodules or masses of sarcomatous growth were either evident before, or discovered at the operation. In No. 48 a small nodule was found on the outer surface of the sclera; its nature, whether inflammatory or sarcomatous, was undetermined.

In 23 cases (Nos. 2, 5, 6, 8, 9, 21, 29, 31, 37, 46, 49, 56, 61, 63, 64, 66, 69, 83, 90, 93, 95, 99, 103) the tumour had invaded the optic nerve from the choroid; this was sometimes evident only upon microscopic examination. In 17 cases no note was made as to the condition of the nerve, and in the 63 remaining cases the nerve was not involved. Of the 23 cases in which the tumour had extended to the nerve, death has occurred in 14, 6 are still alive, and 3 are untraced.

Nature of Tumour.

There appeared, from analysis, to be no constant relation between the shape and arrangement of the tumour cells, and the subsequent history of the case. Of 21 cases in which death resulted from metastasis, the tumour cells were spindle-shaped in 8, oval in 1, round in 5, mixed in 5, not noted in 2.

In all these cases (except one in which there is no note) the tumours were more or less pigmented.

After-history and Prognosis.

Of the total number of cases, 79 have been traced; of these 39 or 49·36 per cent. are alive; 40 or 50·63 per cent. are dead; in 24 cases the after-history was not obtainable.

Of the 39 living patients:—

1 (No. 10)	has lived	18	years since the operation.	
2 (Nos. 12 and 17)	have „	16	„	„
1 (No. 35)	has „	$9\frac{1}{4}$	„	„
1 (No. 37)	„ „	$8\frac{1}{2}$	„	„
1 (No. 47)	„ „	$6\frac{10}{12}$	„	„
1 (No. 52)	„ „	$5\frac{5}{12}$	„	„
1 (No. 54)	„ „	5	„	„
1 (No. 58)	„ „	$4\frac{1}{2}$	„	„
1 (No. 60)	„ „	$4\frac{8}{12}$	„	„
1 (No. 61)	„ „	$4\frac{1}{12}$	„	„
3 (Nos. 62, 64, 67)	have „	4	„	„
1 (No. 71)	has „	$3\frac{4}{12}$	„	„
2 (Nos. 73, 75)	have „	$3\frac{1}{2}$	„	„
1 (No. 74)	has „	$3\frac{2}{12}$	„	„
2 (Nos. 76, 77)	have „	3	„	„
1 (No. 79)	has „	$2\frac{11}{12}$	„	„
1 (No. 81)	„ „	$2\frac{10}{12}$	„	„
1 (No. 84)	„ „	$2\frac{8}{12}$	„	„
1 (No. 85)	„ „	$2\frac{3}{12}$	„	„
1 (No. 86)	„ „	$2\frac{1}{12}$	„	„
2 (Nos. 87, 88)	have „	2	„	„
1 (No. 89)	has „	$1\frac{10}{12}$	„	„
1 (No. 92)	„ „	$1\frac{3}{12}$	„	„
1 (No. 93)	„ „	$1\frac{1}{2}$	„	„
1 (No. 94)	„ „	$1\frac{5}{12}$	„	„
1 (No. 95)	„ „	$1\frac{2}{12}$	„	„
1 (No. 96)	„ „	$14\frac{1}{2}$ months		„
1 (No. 97)	„ „	10	„	„
1 (No. 98)	„ „	9	„	„
3 (Nos. 99, 100, 102)	have „	8	„	„
1 (No. 102)	has „	7	„	„

We thus have 20 cases in which an interval of three or more years has elapsed since the removal of the primary growth, and the patients are still alive. These 20 cases may be considered with great probability, but not with certainty, as permanent cures; and out of the 79 cases in

which the after-history is known gives a *percentage of recoveries of* 25·31.

This is a much higher average than that of Fuchs (which was 6 per cent.), but lower than those given by Hirschberg (38 per cent.) and Freudenthal (37·5 per cent.).

It should be borne in mind that the lapse of three years after operation, without signs of metastatic or recurrent growth does not mean that the patient is quite safe; for although in the majority of our fatal cases (25 out of 40) death ensued within three years, in several a much longer interval passed and yet eventually the patient succumbed to metastatic tumours.

Of the 40 who are known to be dead:—

2 (Nos. 15 and 40) died within a few hours of the operation from hæmorrhage and shock.
10 (Nos. 8, 9, 11, 29, 34, 49, 66, 82, 90, 103) died during the first year after operation.
9 (Nos. 2, 6, 13, 18, 36, 44, 53, 59, 80) died in the second year.
4 (Nos. 31, 48, 55, 69) died in the third year.
5 (Nos. 4, 43, 51, 57, 78) died in the fourth year.
3 (Nos. 25, 28, 46) died in the fifth year.
1 (No. 42) died in the sixth year.
2 (Nos. 32, 45) died in the seventh year.
1 (No. 21) died in the eighth year.
1 (No. 1) „ „ ninth „
1 (No. 5) „ „ tenth „
1 (No. 3) „ „ eleventh year.

Cause of Death.

Under this heading we can but give the information obtained from medical men, relatives of patients, and the register of deaths at Somerset House. We fully recognise the possibility of error both in the reports sent to us, and in the death certificates in the register.

In 26 cases (Nos. 2, 4, 8, 9, 11, 13, 18, 21, 29, 31, 32, 34, 36, 44, 45, 48, 49, 53, 55, 57, 59, 66, 69, 78, 80, 103) or

32·9 per cent. of the 79 cases traced, death was almost certainly due to metastatic or recurrent growth; of these 26, the liver was known to be affected in 16. *The average duration of life after operation in these 26 cases was two years and four months; accurately, 28·5 months.*

In 2 cases (Nos. 32 and 21) the interval between the operation and death was seven and eight years respectively; the shortest interval (Nos. 29, 34) was six months.

In several of the remaining 14 fatal cases, death was very probably caused by metastatic growth; we have not, however, considered the evidence sufficiently good to group them with the 26 cases mentioned above.

The alleged cause of death in these 14 cases is as follows:—

No. 1, "Bronchitis."
No. 3, "Cancer of Stomach," $10\frac{1}{2}$ years after removal of eye.
No. 5, "Cirrhosis," 10 years after removal of eye.
No. 6, "Inflammation of Lungs and Diarrhœa," 2 years after removal of eye.
No. 25, "Phthisis," $4\frac{1}{4}$ years after removal of eye.
No. 28, "Cramp of heart."
No. 43, "Bronchitis and cardiac failure."
No. 49, "Paraplegia" (? metastatic growth in vertebral column).
No. 82, "Irritation of Brain" (? intracranial growth), 7 months after removal of eye.
No. 90, "Disease of Uterus" (? metastatic growth), 5 months after removal of eye.
No. 42, Died suddenly, cause unknown.
No. 51, "Phthisis," $3\frac{2}{12}$ years after removal of eye.
Nos. 15 and 40, died (as already mentioned) a few hours after the operation.

Fuchs found that $18\frac{1}{2}$ per cent. of his collected cases suffered from metastasis, but he adds that this percentage is probably too low; in 22 patients who had been under his own observation, he was able to trace 17, and of this

number 11 died from metastatic growths, and in 2 others death was probably, but not certainly, due to this cause.

Hirschberg gives the percentage of metastasis in his 13 cases as certainly 38 per cent., and probably higher.

Local Recurrence.

In 7 (8·86 per cent.) of the 79 cases which were traceable, the growth recurred locally, *i.e.*, in the orbit. The interval between the primary operation and the date at which recurrence was diagnosed, varied from a few weeks to three years. The cases are as follows:—

No. 9, recurrence took place "rapidly," less than 11 months.
No. 11, interval 6 weeks.
No. 18, „ 7 months.
No. 29, „ 2 „
No. 48, „ 5 „
No. 66, „ less than 2 months.
No. 67, „ 3 years.

Of these all but No. 67 are dead. This patient was alive twelve months after the removal of the recurrent growth. Of the other 6, the recurrent growth was removed by operation in 3 cases (Nos. 18, 48, 66), in No. 48 on three separate occasions. In three (Nos. 11, 18, 29) metastatic growths occurred, and in one (No. 66) it is probable, though not certain, that the liver was the seat of a secondary growth. In the remaining 2 cases (Nos. 9 and 48) there was no evidence of metastasis; death was attributable to exhaustion consequent upon the local disease.

It is worth noting that in 4 (Nos. 9, 11, 66, 67, and doubtfully in No. 48) of the above 7 cases, in which local recurrence took place, the sarcoma had perforated the sclera and formed nodules on its external surface; in 3 (Nos. 9, 29, and 66) the optic nerve was invaded by the growth.

Fuchs found that local recurrence was noted in 31 of 235 cases, a proportion of 13 per cent. In 18 of these the

recurrent growth appeared within the first twelve months after removal of the primary tumour, and according to this author the danger of local recurrence is greatest in the first half year after excision of the eyeball.

He gives one case (taken from Sichel) in which nine years elapsed between the removal of the primary growth and the recurrence.

Freudenthal records in his 24 cases, 25 per cent. of local recurrences. The longest interval was ten years; in half of the total number the return of the tumour occurred in the six months following the primary operation.

History of previous Disease or Injury of the Eye.

In 6 cases (Nos. 6, 8, 15, 62, 63, 83) the tumour occurred in eyes blind from other causes, and often shrunken. In No. 63 the eye had been blind for 18 years; in No. 83, for 16 years; in No. 6, for 13 years; in No. 8, for 12 years; in No. 62, for 7 years; and in No. 15, for 4 years. In Nos. 62 and 63 the eye had been liable to frequent recurrent inflammatory attacks.

In 5 cases (Nos. 10, 23, 67, 71, 84) a history of injury to the eye was obtained.

In Case 10 a perforating wound was inflicted with a sharp stick eighteen months before the eye was removed. The wound was in the ciliary region and the tumour grew at the site of the scar. In the remaining 4 cases the injury was not a perforating wound; in Case 23 it occurred 10 months; in Case 67, 7 months; in Case 71, 12 months; and in Case 84, 3 years, before the eye was removed.

If we add to these, Nos. 8 and 83, in which the eye was shrunken, but had been wounded, we have a total of 7 cases, 6·79 per cent., with a definite history of injury.

Family History.

The information as to family history is meagre, and necessarily somewhat unreliable; the patient being in most cases the only available source of information.

In 50 of our cases the family history was negative. In 38 no notes on this point had been made. In 14 cases a history of "tumours" in near relatives was obtained, and in some this history was very strong.

Two of our cases (Nos. 2 and 99) were mother and daughter. The patient (No. 2) æt. 38, had lost the sight three years before, and had her eye removed one year after, the birth of her seventh child; this child was the patient No. 99. In No. 99 the symptoms came on, and the eye was removed during her first pregnancy. The two tumours were very similar in character and position, and in both patients the left eye was the seat of the sarcoma.

Postscript.

Dr. Hill Griffith ("Ophthalmic Review," December, 1891) gives the average age of his fatal cases as 52·1 years, and that of his recoveries as 38 3. In our 26 cases of death from metastatic and recurrent growth, the average age was 55·1; in 19 cases of recovery (excluding the sarcoma of iris, Case No. 73) the average age was 44·16.

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1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
1 *94* ~1871.	John M.	L	62	Black speck noticed on sclerotic, 10 months	—	Enucleation	9 years
2 *66*	Martha G.	L	38	Blind, 4 years. Protrusion, 1 year	Less than 1 year	Removal of eyeball. Partial exenteration of orbit	About 17 months
3 *134*	Thos. T.	R	45	Eye protruding, 12 months. Blind, 6 weeks	—	Removal of eyeball and extra-ocular tumour, chloride of zinc paste applied	10½ years
4 *124*	John A.	R	45	Failure of sight, 5 years. Choroiditis and retinal detachment 1 year later. Blind 6 months	3¼ years	Enucleation	4 years

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Black tumour growing by wide base from choroid, nearly filling outer half of globe; cells mainly spindle-shaped, but round and oval cells present. Black patches in sclerotic and sub-conjunctival tissue beneath base of tumour	"Rather diminished"	—	Negative	Reported in O. H. R., vol. vii, p. 385, and vol. ix, p. 41. Death from "Bronchitis."
Large broad based pigmented tumour in upper part of globe, which had perforated the sclera and formed a mass beside the optic nerve as large as a filbert. The cells of the tumour were spindle-shaped. Optic nerve invaded by tumour	—	Liver and glands of groins and axillæ and skin of abdomen	One sister died æt. 40 of "tumours" of breast, with probable multiple secondary growths	Reported in O. H. R., vol. vii, p. 389, and vol. ix, p. 42. This patient was the mother of Case 99 in these tables.
Black spindle celled tumour beginning in the outermost layers of the choroid, near the posterior pole, and extending through the sclera to form a large mass in the orbit. The optic nerve was not invaded	—	—	Paternal uncle died of "cancer of nose" æt. 79. Paternal aunt died æt. 34 of "consumption"; she had a tumour of breast	Wife states that the cause of death was "Cancer of Stomach." Patient was ill for ten months before death. Reported in O. H. R., vol. vii, p. 611; vol. ix, p. 43.
Irregularly pigmented tumour at lower part of globe, with a very wide base. Retina detached in umbrella form. O.N. not involved. Growth composed of spindle cells	+ T. 3.	R. Scapula. Dorsal Vertebræ	Unknown	Reported in O. H. R., vol. vii, p. 613. Post-mortem report in O. H. R., vol. ix, p. 43.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
5 *169*	Geo. A.	L	50	Failure of sight began 5 years before, and progressed to blindness in 12 months	—	Removal of eyeball, chloride of zinc paste applied	10 years
6 *135*	Mr. C.	R	78	Eye blind and shrunken for 13 years. Protrusion of eyeball noticed only 3 weeks	—	Enucleation. Partial exenteration of orbit	2 years
7 *88*	Wm. A.	L	54	—	—	Enucleation	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
late - coloured soft tumour of choroid, nearly filling globe; base at lower and outer part; mass protruding through perforation in cornea; optic nerve invaded by new growth. Cells elongated and of varying shape. Much pigment in masses throughout the tumour	—	—	Negative	Reported in O. H. R., vol. vii, p. 615; vol. ix, p. 44. Cause of death registered, "Cirrhosis."
lass of growth filled shrunken eyeball and extended posteriorly around O.N. about 15 mm. Growth composed of large spindle cells, and was quite devoid of pigment, but contained some blood extravasations. O.N. surrounded and invaded by growth	—	—	Female cousin suffering from tumour behind jaw, thought to be "cancerous"	Death reported to have been caused by "Inflammation of lungs and diarrhœa." Reported in O. H. R., vol. vii, p. 616; vol. ix, p. 44.
oft choroidal tumour "as large as a cherry," with wide base. Retina detached; growth consisted of spindle and oval cells, unpigmented; blood extravasations in growth. No note of involvement of O.N.	T. had been high	—	Unknown	Reported in O. H. R., vol. vii, p. 618. Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
8 *137*	Wm. F.	L	69	Blind for 12 years. Painful and prominent for 4 or 5 months	—	Removal of eyeball and tumour "*en masse*"	8 months
9 *157*	Emily B.	L	53	Failure 5 years before. Eye became blind in 1 year. "Glaucoma" noted 3 years before. Eyeball afterwards shrank. Painful 9 months. Prominent 1 month	"Rapidly recurred"	Enucleation, chloride of zinc paste applied	11 months
10 *278*	Lavinia B.	R	18	Failure of sight after perforating wound 18 months before. Painful, 2 weeks	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Eyeball shrunken, it contained growth springing apparently from the choroid near the O.D., and extending chiefly backwards to form a large irregular nodule on the posterior surface of the sclera surrounding the O.N. Tumour consisted chiefly of spindle or oat-shaped cells. It contained but little pigment. O.N. deeply invaded by growth	—	Liver, according to physical signs. No post-mortem examination	Negative	Reported in O. H. R., vol. vii, p. 277; vol. ix, p. 45.
Eyeball filled by melanotic tumour, which extended through sclera posteriorly and destroyed O.N. behind point of section. Tumour composed of oval, spindle, and round cells, all of large size	—	Orbit spreading to forehead and to the chin	Sister died of large tumour in stomach. Paternal aunt died of "cancer of breast" æt. 50. Female first cousin died of "cancer of breast"	Reported in O. H. R., vol. ix, p. 45.
At upper outer part, round dark tumour attached to ciliary body by wide base. Tumour consisted of fusiform and spindle cells, scanty dark brown pigment in the cells and in separate masses. Numerous large blood channels. The tumour corresponded to seat of original injury	+ T.	—	Unknown	Reported in O. H. R., vol. viii, p. 264; vol. ix, p. 46. Alive and well, January, 1891, eighteen years after operation. History of injury by a sharp stick, damaging the sight, eighteen months previously.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
11 *60*	Ellen M.	L	62	Failure with pain to blindness in several weeks, 2½ years before. Eyeball displaced 3 months	6 weeks	Enucleation, followed by application of chloride of zinc paste	7 months
12 *438*	Jemima P.	R	63	Sight, "dim," 2 years. P.l. only, 1 month	—	Enucleation	Alive
13 *541*	Matthew H.	L	36	Defect of sight, 12 months. Constant pain 5 weeks, V. reduced to shadows 2 weeks	—	Enucleation	2 years
14 *547*	Emma M.	R	57	"Black spots" before eye, 12 months. Dulness of sight, 8 months. Pain, 5 days. Eye blind for some weeks	—	Enucleation	Unknown

ROYAL LONDON OPHTHALMIC HOSPITAL

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
yeball filled by melanotic growth, which had perforated the sclera above. Large mass of growth in orbit. Tumour cells spindle-shaped. All coats of eye, except sclerotic, replaced by new growth	—	Orbit, and all thoracic and abdominal organs except spleen. R. 7th rib and rectus abdominis muscle. Brain unaffected	Negative	Reported in O. H. R., vol. ix, p. 48. Pathol. Soc. Trans., 1871–72, p. 251.
umour arising from choroid at inner and posterior part, and filling nearly $\frac{2}{3}$ of vitreous chamber. Chiefly composed of round cells, and contained very little pigment.	T.n.	—	Negative	Reported in O. H. R., vol. viii, p. 298. Alive and well, January, 1891, sixteen years after the operation.
igmented tumour growing from lower part of choroid and nearly filling eyeball. Microscopically a round-celled growth very vascular and with but little intercellular material. O.N. not involved	—	"Head and body"	Negative	Reported in O. H. R., vol. viii, p. 299.
mall tumour at upper part of globe, variously pigmented in different parts. Cells round and oval. Numerous large vascular channels in the growth. O.N. not involved	T. "Much increased"	—	Negative	Reported in O. H. R., vol. viii, p. 301. Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
15 *544*	Samuel C.	R	43	Sight failed to complete blindness in 6 weeks, 4 years previously, pain and swelling 6 months	—	Removal of globe and partially of contents of orbit	"A few days"
16 *450*	Fanny Y.	L	61	Sight failing 3 years. Detached retina, 1 year. Pain, 2 weeks before operation	—	Enucleation	Unknown
17 *560*	Mrs. D.	L	59	Symptoms began 5 or 6 months previously. Ophth. evidence, 3 months. Pain, 2 weeks	—	Enucleation	Alive
18 *581* and *711*	Jacob C.	R	48	"Pain and inflammation," 7 months; blind, 3 months	7 months	(1) Enucleation (2) Removal of recurrent growth	2 years

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Globe slightly shrunken, completely filled by moderately pigmented growth, which extended backwards filling orbit. It was not entirely removed by operation. The cells of the tumour are caudate, and inside the globe only contained a little granular pigment	—	—	Father and two brothers of patient died of phthisis	Reported in O. H. R., vol. viii, p. 305. Died from exhaustion consequent upon repeated hæmorrhage from orbit.
Pedunculated choroidal tumour size of small bean; base extends from near O.D. outwards nearly to the equator. Cells, round and oval, generally unpigmented, the growth does not involve O.N.	"Eyeball glaucomatous"	—	Negative as regards tumours	Reported in O. H. R., vol. viii, p. 307. Further history unobtainable.
Tumour growing from choroid above O.D. Three lobes—large detachment of retina. Oblong cells, very slightly pigmented	+ T. 2	—	Unknown	Reported in O. H. R., vol. viii, p. 541. Reported alive and well in June, 1891, 16 years after operation. autumn 1888
Tumour reaches from O.D. nearly to ciliary processes. Encroaches on O.D., but no tumour cells in nerve. Surface grey. Cells mostly fusiform, not much pigment	"Tension increased"	Right orbit. Removed 8 months after excision of eyeball	Tumour of breast in one sister removed, and no recurrence in 8 years	Reported in O. H. R., vol. ix, p. 72. Death from "cancer of liver."

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
19 *26a*	Female	—	37	Three years	—	Enucleation	Unknown
20 *121*	Lucinia G.	L	29	Failure, 2 years. Pain, 6 days	—	Enucleation	Unknown
21 *225*	Chas. T.	L	28	Dimness, 7 months. Pain, 3 months. Ulcer of cornea, 2 weeks later	—	Enucleation	8 years
22 *293*	Emma T.	R	42	Sight failing, 3 years. No pain	—	Enucleation	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
horoidal tumour on outer side eyeball from ciliary body to O.D. Cells oval and unpigmented. Pigment contained in larger cells. Some areas of degeneration in the tumour. Excess of nuclei in O.N.	"Tension increased"	—	No note	Reported in O. H. R., vol. x, p. 240. Further history unobtainable.
umour of choroid on temporal side, broad base, narrow neck, and large head. Its base reaches from close to O.D. nearly to ora serrata. Cells are small and round	+ T.	—	No note	Reported in O. H. R., vol. x, p. 239. No recurrence 17 months after operation. Further history unobtainable.
umour at inner equatorial part of choroid, size of pea. Cells generally oval, and contain in outer part of tumour much pigment in fine granules. Excess of staining cells in the O.N. very like unpigmented cells in tumour	− T.	"The brain"	Negative	Reported in O. H. R., vol. x, p. 245. Death reported by sister, "Tumour on the brain."
ound, firm, slightly lobulated tumour of choroid at posterior part, overhanging O.D. central part mottled with pigment. Spindle cells, numerous blood vessels, not much pigment	− T.	—	Negative	Reported in O. H. R., vol. x, p. 232. Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
23 *367*	Clara W.	L	23	Sight dim, 8 months. Eye painful, 6 weeks	—	Enucleation	Unknown
24 *375*	Annie C.	L	19	Sight defective, 9 months; occasional pain	—	Enucleation	Unknown
25 *419*	George B.	L	49	Pain, 2 years. No p.l. at operation	—	Enucleation	4¼ years
26 *470*	Henry D.	L	37	Defect known, 6 months. Pain, 1 month. Blind, 1 month	—	Enucleation	Unknown
27 *497*	George W.	R	43	Severe pain, 9 weeks. Eye found to be blind then	—	Enucleation	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
umour lower inner quadrant from equator to O.D. Smooth, slightly pigmented, numerous large blood vessels. Cells fusiform. O.N. inflamed, but probably not invaded by growth	+ T. 1	—	Negative	Reported in O. H. R., vol. x, p. 242. Doubtful history of blow by cricket ball 10 months before she came to hospital. Further history unobtainable.
arge rounded, darkly-pigmented tumour springing from ciliary body. Cells generally large and polygonal, containing much pigment. Large thin-walled capillaries.	T. n.	—	A grand-aunt of patient died of "tumour," no other history	Reported in O. H. R., vol. x, p. 234. No recurrence 11 months after operation. Further history unobtainable.
Tumour of choroid on temporal side overhanging O.D. and reaching in front of the equator. Fusiform cells. Thin-walled vessels. O.N. shows increased nucleation; but cells probably inflammatory	Tension increased	—	No notes	Reported in O. H. R., vol. x, p. 241. 18 months after operation there was no recurrence. Death reported 4¼ years after operation from "phthisis."
Tumour of choroid and ciliary body on inner side. Cells, round, small, and unpigmented; others large and densely pigmented. Numerous thin-walled vessels. O.N. increase of nuclei, no pigmented cells	+ T.	—	Negative	Reported in O. H. R., vol. x, p. 237. Further history unobtainable.
Growth at lower part, extending from ciliary body to O.D. Cells small, round, or oval. Pigmentation irregular. Numerous thin-walled vessels	T. "much diminished"	—	No notes	Reported in O. H. R., vol. x, p. 243. Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
28 *580*	James L.	L	52	Dimness, 17 months. Detachment of retina known 13 months	—	Enucleation	4½ years
29 *612*	Mr. B.	R	84	Loss of portion of field, 13 weeks. Pain, 3 weeks	2 months	Enucleation	6 months
30 *616*	Robert S.	L	44	Failure, 27 months. Detached retina diagnosed, 14 months. Pain, 1 week	—	Enucleation	Unknown
31 *622*	Lewis S.	L	60	Failure, 10 years. Blind, 5 years	—	Enucleation	2½ years
32 *696*	Mary A. P.	L	49	Detached retina and bare p.l., 11 months. No p.l., 6 months. Pain, 2 months	6½ years.	Enucleation	7 years

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
lobe half filled by tumour growing from choroid. Cells spindle-shaped, with scattered pigment bodies among them. Slight inflammation of O.N.	T. "slightly diminished"	—	No notes	Reported in O. H. R., vol. x, p. 231. No recurrence 3 months later. Died 4½ years after operation, of "spasm or cramp of heart."
umour of choroid on outer side of eyeball; cells mostly round with large nuclei. Blood vessels not numerous. Scarcely any pigment. O.N. invaded up to cut surface	+ T. 3.	Orbit, liver.	No notes	Reported in O. H. R., vol. x, p. 235. Death from "liver and dropsy."
umour growing from equator at outer side. Tumour pedunculated, size of pea; retina completely detached. Cells oval and spindle-shaped. Pigment scanty and confined to small areas. Tumour very vascular	+ T.	—	No notes	Further history unobtainable.
ungating black tumour which has perforated sclera. Globe filled by soft coal-black mass. O.N. deeply invaded. Tumour composed of fine spindle cells. Pigment irregular in distribution	"+ T."	Liver	Unknown	Death certified, "Sarcoma of liver."
umour of choroid growing from temporal equatorial part. No microscopical examination	+ T.	Liver	Unknown	Death certified, "Cancer of liver."

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life aft primar operatic
33 *623*	Edward C.	L	50	Failure, 9 months	—	Enucleation	Unknow
34 *711*	Joseph R.	R	60	Detached retina, 3 years. Pain began 3 months later	—	Enucleation	6 mont
35 *733*	Mary D.	R	58	Detached retina, 1 year. Pain, 5 weeks	—	Enucleation	Alive
36 *753*	Jas. H.	L	58	Failure of sight, 4 months	—	Enucleation	1 year a 8 mont
37 *906*	Eliza M.	L	29	Failure of sight, 2 years. Blind, 1 year	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Choroidal growth extending from near O.D. to ciliary body on nasal side. O.N. not invaded. Tumour very vascular, cavernous. Deeply pigmented in parts	T. n. or —.	—	Negative	Further history unobtainable.
Dark, slightly nodulated growth on nasal side of choroid, which fills $\frac{2}{5}$ of globe; has perforated sclerotic. Partially pigmented	+ T.	—	Unknown	Death certified from "Inflammation of spinal cord and paraplegia."
Rounded pedunculated dark tumour springing from lower and inner part of choroid, extending from O.D. to within 2 mm. of equator	+ T. 1	—	Maternal aunt died of "Tumour of breast"	Alive and well, January, 1891, $9\frac{1}{4}$ years after excision. are invited but no reply 1895.
Dark choroidal growth extending from ciliary body nearly to O.D. on temporal side. Small spindle cells, with much pigment in places. O.N. not invaded by tumour cells	T. n.	Liver	Unknown	Death from "Cancer of liver."
Choroidal tumour in upper inner part, grey in colour, partially pigmented. Small spindle cells, in places containing much pigment. O.N. deeply invaded by tumour cells	—	—	Unknown	Patient writes in January, 1891, $8\frac{3}{4}$ years after operation, that she is in good health. Reported in O. H. R., vol. xi, p. 53. alive & well.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life afte primary operatio
38 *926*	Jane N.	L	42	Sight failing, 2 years. Pain, 1 month	—	Enucleation	Unknow
39 *1098*	John H.	R	50	Failure, 12 months. Pain, 4 months	—	Enucleation	Unknow
40 *1114*	Male.	—	76	2 years	—	Removal of globe and tumour "*en masse*"	—
41 *1235*	Samuel B.	R	50	Failure of sight, 4 years. Blind, $3\frac{9}{12}$ years. Pain, 1 week	—	Enucleation	Unknow

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
lobe completely filled by new growth, in which are several blood extravasations. It is a spindle-celled sarcoma	+ T. 3	—	Negative	Further history unobtainable.
olid growth below and to nasal side; close to O.D. Dark in colour, very vascular, consists of small round and spindle cells; is irregularly pigmented, and contains large blood channels. O.N. not involved	+ T. 1	—	Unknown	Further history unobtainable.
Eyeball filled by new growth, which protrudes through the cornea and forms a large fungating mass, pigmented in parts. The central part is soft, and has broken down. Cells small, round, and oval. Pigment scanty, chiefly in large roundish cells	—	—	Unknown	Death occurred immediately after the operation.
Dark, mushroom-shaped growth, springing from choroid near O.D. and nearly filling posterior part of globe. Growth is a spindle-celled, very vascular sarcoma, degenerating in central part; deeply pigmented at margins. O.N. not infected	—	—	Unknown	No further history obtainable. Reported in O. H. R., vol. xi, p. 43.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation
42 *1240*	Daniel O'N.	R	67	Failure of sight, 4 years. Blind, 2 years. Pain, 4 weeks	—	Enucleation	5½ years
43 *1268*	Sarah B.	R	54	Failure, 6 months	—	Enucleation	3½ years
44 *1306*	Robt. B.	L	70	Failure, 18 months. Detached retina, 15 months. Pain, 8 days	—	Enucleation	16 month
45 *1321*	Elizabeth F.	R	52	Blind, 17 months. Pain, 2 months	—	Enucleation	6½ years
46 *1343a*	William P.	R	35	Failure, 7 months. Blind, 6 to 8 weeks	—	Enucleation. Exenteration of orbit 3 days later, and chloride of zinc paste applied	4 years a 2 month
47 *1390*	Henry G.	R	30	Failure, 18 months. Blind, 9 months. Pain, 1 month	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
ounded tumour at posterior part of globe. Retina detached. Growth is a round-celled unpigmented sarcoma. O.N. not involved	+ T. 2	—	Unknown	Died "suddenly." Cause of death doubtful.
arge coal-black tumour on nasal side, springing from choroid at equator. Retina detached. Round-celled, intensely melanotic growth. O.N. not involved	T. n.	—	Negative	Death certified from "Chronic bronchitis and cardiac failure."
umour growing from equator, filling ¾ globe. Retina detached. Mixed spindle and round-celled sarcoma of choroid, with scattered pigment. O.N. not involved	+ T. 3	Liver	Unknown	Death from "Congestion of liver, ascites, exhaustion."
arge black mass in upper part of globe. Is a round-celled, deeply pigmented sarcoma	—	R. Femur, ? lungs.	Unknown	Death from "Cancer of right femur, congestion of lungs, and coma."
arge pigmented tumour at upper and hinder part of globe. O.N. involved as far back as point of section. No microscopic examination	+ T.	—	Negative	Died after 12 months' illness. Was paralysed in lower extremities.
rregular pigmented tumour close to O.D. on temporal side, which has extended through the sclera, and formed a nodule on posterior surface alongside O.N.	−T. 2	—	Negative	Patient reports himself in good health in January, 1891, 6 years 10 months after the operation.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
48 *1408*	Ethelbert E.	R	60	Failure, 2 years. Pain, 1 month	5 months	(1) Enucleation; (2) Removal of recurrent growth on 3 separate occasions	2½ years
49 *1495*	Stephen C.	L	50	Failure, 12 months. Blind, 3 weeks. Pain, 1 week	—	Enucleation	1 year
50 *1532*	Louisa L.	R	39	Detached retina, 12 months. Pain, 3 days	—	Enucleation	Unknown
51 *1823*	Joseph Y.	R	58	Failure, 10 months. Blind, 3 months. Painful, 5 weeks	—	Enucleation	3 years and 2 months

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Growth springs from choroid above, and nearly fills the eyeball. Mixed, round, and spindle cells, scantily pigmented; very vascular in parts. An inflammatory (? sarcomatous) nodule on posterior surface of sclera, close to O.N. O.N. not invaded	+ T. 3	1st recurrence, R. lower lid; 2nd, R. lower lid; 3rd, R. orbit	Negative	Reported in O. H. R., vol. xi, p. 400. Died from "Cancer of face and exhaustion."
Large rounded growth springs from posterior and inner part of choroid; partially pigmented; surrounds entrance of O.N. It is a round and oval-celled tumour. Pigment irregularly distributed. O.N. invaded by growth, which is spreading into sclera also	+ T. 2	—	Unknown	Reported in O. H. R., vol. xi, p. 402. Death reported from "Sarcoma."
Mound-shaped choroidal growth at posterior pole; spreading into sclerotic along ciliary vessels. It is composed of small spindle-cells, and is very sparsely pigmented	+ T. 3	—	Unknown	Further history unobtainable.
Choroidal growth springing from near O.D., reaching to equator. Small, round sarcoma-cells, except near base, where some are spindle-shaped. Pigment in posterior part only. O.N. not invaded	T. ? +	—	Unknown	Reported in O. H. R., vol. xi, p. 403. Death certified from "Phthisis."

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
52 *1885*	Eliza A.	R	33	Detachment of retina, 10 months. No pain	—	Enucleation	Alive
53 *1994*	Thomas B.	R	64	Failure, 2½ months. Pain, 3 weeks	—	Enucleation	2 years
54 *1999*	Edridge P.	L	64	Failure, 5 months. No pain	—	Enucleation	Alive
55 *2010*	Robert A. T.	R	60	Failure, 6 months. No pain	More than 17 months	Enucleation	2¼ years

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
In upper outer part of globe, posteriorly, a growth, size of pea, arising by a wide base from choroid. It is a small, round, and oval-celled tumour partially pigmented, very vascular. O.N. not invaded	+T. 1	—	Unknown	Reported in O. H. R., vol. xi, p. 405. Patient alive and well, January, 1891, $5\frac{5}{12}$ years after operation. Letter returned back
Large choroidal tumour on temporal side of eyeball, broad base, and narrow neck with globular top. Growth is round-celled, irregularly pigmented. Cells beginning to infiltrate sclerotic. O.N. not involved	+T. 2	—	Unknown	Reported in O. H. R., vol. xi, p. 407. Death certified from "Cirrhosis of liver and ascites."
Large rounded tumour in outer and lower part, in deep layers of choroid. Consists of round unpigmented cells. O.N. not involved	T. n.	—	Father died, "Cancer of stomach," æt. 67. One sister of "Cancer of womb," æt. 52. One of "Phthisis," æt. 20	Reported in O. H. R., vol. xi, p. 408. Alive and well 5 years after operation (January, 1891). Letter returned unk
Large rounded growth from upper outer part of choroid anteriorly. Fills $\frac{3}{4}$ vitreous chamber; composed of small spindle and round cells, is irregularly pigmented. O.N. not involved, but cells spreading into the sclerotic	T. n.	Liver	Negative	Reported in O. H. R., vol. xi, p. 409. Died of "Cancer of the liver."

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
56 *2036*	Julia J.	L	44	Failure, 18 months. Blind, 5 months. Pain, "shortly before admission"	—	Enucleation	Unknown
57 *2067*	Josiah N.	L	59	Failure, 26 months. Pain and blindness, 3 days	—	Enucleation	3½ years
58 *2086*	Matilda E.	L	35	Blindness discovered, 8 weeks. Pain, 8 weeks	—	Enucleation	Alive
59 *2133*	Henry T.	L	63	Failure, 4 months. Blind, 2 months. Pain, 1 week	1½ years	Enucleation	2 years
60 *2136*	Francis H. B.	R	42	Failure, 2½ years	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Growth springs from choroid above and to outer side of O.D., extending far forwards in vitreous chamber. Growth consists of round and polygonal and irregular shaped cells. Much pigment in posterior part. O.N. invaded, but not at point of section	+T. 2	—	Negative	Reported in O. H. R., vol. xi, p. 411. Alive 15 months after operation. Further history unobtainable.
Soft choroidal growth up, out, extending forwards to root of iris. It is a large, round-celled growth, pigmented only in part. Invades inner layers of sclera. O.N. not involved	+T. 2	—	Unknown	Reported in O. H. R., vol. xi, p. 412. Died from "Cirrhosis of liver and dropsy."
Diffuse choroidal sarcoma at posterior part, surrounding O.D. Tumour consists of oval and spindle cells. Not pigmented more than adjoining choroid. O.N. not involved	T. n.	—	Unknown	Reported in O. H. R., vol. xi, p. 414. Alive and in good health, January, 1891, 4½ years after operation. Died 1895. Cause.
Large deeply pigmented growth springing from choroid on nasal side. Spindle-shaped cells. O.N. and sclerotic not invaded	+T. 1	Liver	Negative	Reported in O. H. R., vol. xi, p. 415. Death from "Cancer of liver."
A rounded, smooth choroidal growth at posterior part up and out. Small, round, and oval cells. Large number of pigmented cells. O.N. not involved	T. n.	—	Unknown	Reported in O. H. R., vol. xi, p. 415. In good health, April, 1891, 4 years 8 months after operation.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
61 *2203*	Kate G.	R	35	Failure, 4 to 5 years. Blind, 1½ years. Painful on and off, 1½ years	—	Enucleation	Alive
62 *2248*	Jas. W.	L	40	Blind, 7 years. Frequent attacks of pain	—	Enucleation	Alive
63 *2254*	Henry R. D.	R	47	Blind, 18 years. Painful occasionally. Increase in size of globe, noticed 6 weeks	—	Enucleation	Unknown
64 *2255*	Charles M.	L	47	Nearly blind, 4½ years, after injury. Blind, 4 years. Pain, 3 months	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Rounded choroidal growth on temporal side. Nodular on surface, greyish colour. Microscop., it consists of round and oval cells; in parts it is deeply pigmented. Sclerotic free, but O.N. invaded by the tumour cells	+ T. 2	—	Negative	Reported in O. H. R., vol. xi, p. 416. Patient alive and well, January, 1891, $4\frac{1}{12}$ years after operation. alive & in good health
Eyeball shrunken. Rounded mass of new growth, almost filling globe and extending through sclera on temporal side to form a small nodule. It is a round and oval celled sarcoma, unpigmented. O.N. not involved	—	—	Negative	Reported in O. H. R., vol. xi, p. 417. Reports himself well 4 years after the operation, February, 1891.
Eyeball shrunken. Filled by new growth. The tumour has perforated sclerotic anteriorly, and is invading O.N. Consists of round and spindle cells. Islands of pigment scattered through growth	—	—	Negative	Reported in O. H. R., vol. xi, p. 419. Known to be alive and well 5 months after operation. Further history unobtainable.
On temporal side of O.D. a tumour of choroid, irregularly pigmented. Hard nodule of new growth on external surface of sclera close to O.N. Round and oval cells, which are extending along O.N., but do not reach cut surface	+ T.	—	Tumour of breast in one sister. Removed, and no recurrence in 7 years	Reported in O. H. R., vol. xi, p. 420. Alive and well January, 1891, 4 years after operation. alive and in good health. Aug 1898

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation
65 *2257*	William G.	L	49	Failure, 7 and 8 years. Increased failure and pain, 3 weeks	2 years and 5 months	Enucleation	Unknown
66 *2317*	Geo. F.	L	70	Failure, "some months." Blind and painful, 7 weeks	Less than 2 months	(1) Enucleation; (2) Exenteration of orbit, 2 months later. Application of chloride of zinc paste	8 months
67 *2366*	Mary A. D.	R	57	Failure, about 7 months. Rapidly progressing to blindness. Pain, 5 weeks	3 years	(1) Enucleation; (2) Removal of recurrent growth, partial exenteration of orbit	Alive Recurr 1891. Local gro
68 *2375*	Geo. H.	R	35	Failure, 3 to 4 months	—	Enucleation	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
A large tumour growing from anterior (ciliary) part of uveal tract on temporal side. Invades root of iris. Contains round, oval and spindle cells. Pigmented deeply in parts. O.N. not involved	T. n.	Liver	Negative	Reported in O. H. R., vol. xi, p. 422. Was in Guy's Hospital with enlarged painful liver in October, 1889, 2 years and 5 months after operation. Has not been heard of since.
Large tumour springs from posterior and outer part of choroid, and nearly fills vitreous cavity. Surrounds O.D. A small nodule on external surface of sclera. Cells generally round, in places degenerated, very little pigment. O.N. deeply invaded by tumour cells.	+ T. 2	Left orbit. Second recurrence in same situation	Mother died in old age of "polypus in the nose," after two operations	Reported in O. H. R., vol. xi, p. 424. Was temporarily jaundiced shortly before death.
A soft black mushroom-shaped growth at posterior pole of eye. It has extended backwards through sclera, and there are two extra-ocular nodules. Cells large and round, and oval in shape; deeply pigmented. O.N. not involved	+ T. 1	Right orbit In stump ? am a leg	Negative	History of blow by small piece of coal shortly before failure of sight began. In August, 1890, 3 years after excision of eye, a recurrent growth was removed from orbit at a provincial hospital. 12 months later patient in good health.
Large growth from anterior part of choroid above, displacing lens downwards. Iris and cil. body involved in growth. Mixed round and spindle cells, chiefly the latter. Very sparsely pigmented. O.N. not invaded	T. n.	—	Negative	Further history unknown. Reported by Dr. Mules in O. S. Trans., vol. viii, p. 30, Case 7.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation
69 *2388*	Mary E. R.	L	31	Dimness of sight, 1 year. Intermittent pain, 7 months. Blind, 6 weeks	About 18 months	Enucleation. Resection of optic nerve	2½ years
70 *2407*	Chas. B.	L	39	Failure, 3 months, but v = $\frac{3}{9}$	—	Enucleation	Unknown
71 *2411*	Thos. H.	R	47	Failure, 12 months. Bare p. l. for 9 months	—	Enucleation	Alive 1890
72 *2448*	Kate B.	R	15	Failure discovered, 2 months. Pain about same time	—	Enucleation	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Tumour extending from root of iris nearly to O.D. in lower part of globe. Irregularly pigmented. Composed of round and oval cells, some of latter elongated to spindles. Pigment abundant. A small separate area of melanotic growth in O.N., near lamina cribrosa	+ T. 2	Liver	Negative	Was "convulsed" one month before death.
Rounded growth, in equatorial region up and in; irregularly pigmented. Cells spindle shaped and round; arrangement alveolar. O.N. not involved. Sclera at base invaded by tumour cells	T. n.	—	Negative	Further history unobtainable.
Extensive flattened growth in upper part of choroid, reaching from ora serrata to O.D. Cells generally round, some elongated. Moderate amount of pigment. O.N. not involved	+ T. 2	—	Unknown	History of blow by a stone shortly before failure began. In good health, January, 1891. 3⅓ years after operation.
Darkly pigmented rounded choroidal growth at upper part of eyeball, its anterior surface close to lens. Sclera not invaded. O.N. not invaded. Cells long spindles, and round; pigment in round cells	T. n.	—	Negative	Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
73 *2456b*	Arthur H.	L	21	Spot on iris noticed, 3 years. v = $\frac{6}{6}$	—	Enucleation	Alive
74 *2481*	Jane C.	L	47	Dimness of sight, 3 months. Slight pain, 1 month	—	Enucleation	Alive
75 *2488*	Eliz. C.	L	30	Dimness, 8 months. Pain, 2 weeks	—	Enucleation	Alive
76 *2500*	John B.	R	64	Failure, 2 years. Slight pain, 2 months.	—	Enucleation	Alive

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Growth in iris chiefly in lower and inner part; involving entire width of iris. Ciliary body involved. Patchy pigmentation of iris over $\frac{3}{4}$ its circumference. Growth composed of round and spindle cells, with scattered patches of pigment.	T. +	—	Negative	Alive and well, February, 1891, $3\frac{1}{2}$ years after operation. Letter returned Not known
Partially pigmented growth in ciliary region on nasal side, projecting into A.C., and extending backwards to equator. Cells round and spindle shaped; much pigment in growth. Inner layers of sclera attacked	T. n.	—	Negative	Reported by Dr. Mules in O. S. Trans., vol. viii, p. 80, Case 6. Alive and in good health, January, 1891, $3\frac{2}{12}$ years after operation. Letter returned. Not known
Dark mushroom choroidal tumour on temporal side, extending from ciliary region backwards behind equator. Cells are spindle shaped; much pigment in rounded cells. Growth not very vascular	+ T. 2	—	Negative	In good health, May, 1891, $3\frac{1}{2}$ years after operation. Died of Cancer in Stomach many years ago
Grey, lobulated, soft growth in choroid, in upper outer quadrant, reaching from O.D. forwards. Growth is unpigmented except at margins. Cells round and oval. O.N. not invaded	T. n.? —	—	Negative	Alive January, 1891, 3 years after operation. Letter returned unknown

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation.
77 *2526*	Thomas G.	L	41	Failure, 5 weeks. Noticed after some neuralgic pain.	—	Enucleation	Alive
78 *2528*	Maria N.	R	44	Failure, 3 months. Blind, 2 months. Pain, 2 months.	—	Enucleation	3⅓ years
79 *2548*	Louisa W.	R	44	Blindness discovered, 4 months. Pain, 2 weeks	—	Enucleation	Alive
80 *2565*	George B.	L	48	Dimness of sight, 6 months	About 8 months	Enucleation	17 months

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
mall, spongy growth in choroid immediately above O.D., which it overhangs. A round and oval-celled growth, very sparsely pigmented, O.N. not invaded, but tumour in contact with it at scleral ring	T. – ?	—	Negative	In good health February, 1891, 3 years after operation. Unknown. F 98.
Parkly pigmented tumour more than half filling eyeball; reaching from O.D. to ciliary body. It is a mixed round and oval celled growth, deeply pigmented in anterior part, and moderately vascular	+ T. 1	Liver, verified by post-mortem examination	Negative	Died May, 1891, $3\frac{1}{3}$ years after operation, from sarcoma of liver.
arge choroidal growth on temporal side near O.D.; grey colour. Tumour composed of small, spindle-shaped and oval cells; and is scantily pigmented, the pigment in round cells	+ T. 3	--	Not known	In good health January, 1891, $2\frac{1}{12}$ years after operation. Letter returned Unknown
n lower inner part, a tumour reaching from ora serrata nearly to O.D. It is a very vascular, round-celled sarcoma, deeply pigmented in part. O.N. not involved	T. n.	Liver	Negative	Death ascribed to "cancer of liver."

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation
81 *2572*	Harriett R.	R	39	Defect discovered, 3 weeks. Pain, occasionally	—	Enucleation	Alive Recurrence
82 *2586*	Emily H.	L	40	Dimness and pain, 12 months. Blind, 6 months. Severe pain, 1 week	—	Enucleation	7 months
83 *2697*	Richard B.	R	70	Nearly blind, 16 years. Growth noticed, 12 months	—	Removal of entire contents of orbit. Chloride of zinc paste applied	Unknown

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
ight coloured growth springing from choroid, reaching from O.D. to point in front of equator, in upper part of eye. O.N. not involved. Tumour structure very ill defined, and evidently degenerating. Choroid in vicinity much inflamed	T. n.	—	Unknown	In good health January, 1891, $2\frac{10}{12}$ years after operation. Inoculated in chin a little July 1891.
arge, grey, speckled tumour on temporal side, reaching from edge of O.D. nearly to ora serrata. Composed of round and oval cells; exceedingly vascular, unpigmented except at edges. O.N. not involved	+ T. 3	—	Mother died "cancer on the gut."	Death certified from "irritation of brain and syncope."
Globe shrunken and puckered, surrounded by new growth of deep black colour. Eyeball contains a small celled pigmented growth, which has perforated sclera below. Orbit contained large mass of deeply pigmented growth composed of round and spindle cells. O.N. invaded by tumour cells	—	—	Negative	Further history unobtainable.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration of life after primary operation
84 *2718*	Charles B.	L	57	Failure, 6 months. Blind for 5 months. Pain, 3 weeks	—	Enucleation	Alive
85 *2806*	Geo. H.	L	59	Mist over sight, 2 years. Blind, 8 months. Pain, 4 months	—	Enucleation	Alive
86 *2860*	Michael J.	R	70	Failure, 12 months. Pain, 2 months	—	Enucleation	Alive
87 *2879*	Sarah P.	L	70	Blindness discovered, 5 months. Little pain	—	Enucleation	Alive
88 *2881*	Sarah B.	R	59	Failure, 2 years. Pain, 3 months	—	Enucleation	Alive

9.	10.	11.	12.	13.
osition, extent, and nature of tumour.	Tension of eyeball.	Site of recurrent or metastatic growth.	Family history.	Remarks. Previous injury or disease of eye, &c.
rkly pigmented tumour springing from choroid on temporal side. Composed of spindle cells, contains many large blood vessels. O.N. not involved	+ T. 2	—	Unknown	History of injury by "clothes-prop," 2½ years before failure began. Alive and well in June, 1891, 2 years and 8 months after operation. Died of recurrence 188
m grey growth in outer part of globe, wide base and narrow pedicle. Round-celled sarcoma, scantily pigmented. O.N. not involved	+ T. 2	—	Negative	In June, 1891, 2¼ years after operation, alive and in good health. Sept 1898 alive & well as far as he
eply pigmented growth in temporal half of eyeball, springing from choroid close to O.D. O.N. not involved. No microscopic examination	+ T. 1	—	Sister has "cancer of breast," and another sister "a growth inside her"	June, 1891, 2 years and 1 month after operation, alive and in good health.
ge pinkish-grey tumour, fills ⅔ vitreous cavity, springs from lower part of eye. Composed of small round cells, not pigmented. O.N. not involved	T. n.	—	Negative	In good health, June, 1891, 2 years after operation. Died Dec 10 1892 Probably recurrence in abdomen
eply pigmented growth in lower part of eye; two melanotic nodules on external surface of sclerotic. Round-celled sarcoma, with much pigment. O.N. not involved	+ T. 2	—	Negative	In June, 1891, 2 years after operation, writes "that health is failing." Died of Cancer Jan 30 18

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life aft primar operati
89 *2923*	Morgan G.	L	49	Failure, 6 months. No pain	—	Enucleation	Alive
90 *2994*	Annie F.	L	35	Failure, 4 years	—	Eyeball and tumour mass removed entire, chloride of zinc paste applied	5 month
91 *3004*	Emma R.	L	59	Failure, 2 months. No pain	—	Enucleation	Unknow
92 *3016*	George M.	L	62	Failure, 15 months. Pain, 2 months	—	Enucleation	Alive
93 *3025*	Sarah L.	L	46	Failure, 4 or 5 years. Blindness discovered, 4 or 5 months. No pain	—	Enucleation	Alive 8 yea

9.	10.	11.	12.	13.
ɔsition, extent, and ıature of tumour.	Tension of eyeball.	Site of recurrent or metastatic growth.	Family history.	Remarks. Previous injury or disease of eye, &c.
·yish tumour in outer ırt of eyeball, ex-ndıng from near .D. to near the ora ·rrata. It is a round-·lled sarcoma, with rge vessels, and ɔderately pigmented. ·.N. not invaded by ·owth	T. n.	—	Negative	In June, 1891, 22 months after operation, is in good health. Sept 1892 ... in f... health.
rge black growth lling the eyeball and ɔrming a nodulated ıass on posterior sur-ıce of eyeball sur-ɔunding the O.N. ound and spindle-·lled growth, very ensely pigmented. ·.N. deeply infiltrated	—	—	Unknown	Cause of death certified, "disease of uterus, rheumatism, and exhaustion."
ɔwth from choroid at pper part, grey ɔlour. It is spindle-·lled sarcoma; in-ades inner layers of ·lerotic; slightly pig-ıented except pos-·riorly. O.N. not ıvaded	T. "full"	—	Negative	Further history unobtainable.
ni-lunar tumour of ıoroid in upper part eyeball. Small ɔund and spindle cells. ·regularly pigmented. ·.N. not invaded	T. n.	—	Negative	In March, 1891, 15 months after operation, patient in good health. No recurrence.
ɔroidal growth, mot-·ed and grey, springing ·om posterior part, ·ound O.D. Large ɔindle cells; deeply ·igmented in part. .N. infiltrated by tu-ıour cells	T. n.	—	Negative	June, 1891, 1½ years after operation, patient alive and in good health. Died Nov. 1891 Cause not stated.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life afte primary operatio
94 *3064*	Thomas H.	L	25	Failure, 6 to 8 weeks. No pain	—	Enucleation	Alive
95 *3096*	Susan B.	L	57	Failure, 2 years. Pain, 3 weeks	—	Enucleation	Alive
96 *3102*	Jens E.	L	33	Failure, 10 months	—	Enucleation	Alive
97 *3208*	Thomas K.	L	48	Failure, 10 weeks. Blind, 1 week. Pain, 10 days	—	Enucleation	Alive 6 5/12
98 *3226*	Margaret E.	L	43	Failure, 9 months. Blind, 2 months. Little pain	—	Enucleation	Alive about 3

9.	10.	11.	12.	13.
osition, extent, and nature of tumour.	Tension of eyeball.	Site of recurrent or metastatic growth.	Family history.	Remarks. Previous injury or disease of eye, &c.
rge spongy choroidal umour on temporal de of eyeball. Round-elled sarcoma; does ot involve the O.N.	+ T. 1	—	Negative	June, 1891, 17 months after operation, patient in good health.
ree black nodules of ew growth on exter-al surface of sclerotic, ear O.N. Deeply igmented growth in horoid occupying $\frac{3}{5}$ of iat structure. Small pindle and round-elled sarcoma. A lack spot visible in ut surface of O.N.	+ T. 1	—	Unknown	Blow by fist 5 years ago. June, 1891, 14 months after operation, alive, but suffering from continual pain in her head. Aug/98. Alive pain in her head alive, two tumours
owth springing from nterior part of choroid nd ciliary body pove; it is deeply igmented. It is a nall spindle-celled rowth	+ T. 2	—	Mother died of tumour of face, ill 2 years	"Black eye," 5 years ago. In July, 1891, 14½ months after operation, patient in fairly good health.
rge pedunculated owth springing from pper part of choroid ear O.D. Yellowish colour. Mixed und, and spindle-lled tumour almost void of pigment; vading sclera, but ot O.N.	+ T. 2	—	Negative	In good health, June, 1891, 10 months after operation. Died of Bronchitis Jan 29/
eply pigmented owth springing from oroid anteriorly on mporal side. Spin-e-celled sarcoma, ntaining much pig-ent. O.N. not in-lved	T. n.	—	Negative	Alive in June, 1891, 9 months after operation, but in "weak health." Died of Cancer "1893

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life afte primary operatio
99 *3241*	Elizabeth G.	L	20	Blindness discovered, 4 months ago. Pain, a few hours	—	Enucleation	Alive 4 10/12
100 *3250*	John H.	R	64	Failure, 7 months. No pain	—	Enucleation	Alive 7 yrs
101 *3265*	Arthur L.	L	35	Dimness, 9 months. Blind, 5 months. Pain, 1 week	—	Enucleation	Alive
102 *3364*	Mrs. W.	L	38	Dimness, 9 months. Pain, 19 days	—	Enucleation	Alive

9.	10.	11.	12.	13.
sition, extent, and nature of tumour.	Tension of eyeball.	Site of recurrent or metastatic growth.	Family history.	Remarks. Previous injury or disease of eye, &c.
ge dark growth in per hemisphere, filg more than ½ reous chamber. The mour is composed of xed, round, and ndle-shaped cells; contains much pigent in large round ls. O.N. invaded round cells of the owth	+ T. 2	—	*Vide* Case 2	Patient is the daughter of *Case 2*, in these tables. In good health, June, 1891, 8 months after operation. Died 15/7/95 of recurrence.
wth filling ⅓ globe, inging from upper rt of choroid, not ching to the O.D. all spindle-celled coma, with tracts of ment, contained efly in large round ls	T. "full"	—	Negative	In good health, June, 1891, nearly 8 months after operation. Died and Left 29 189 Cause not stated. Epithelial hæmatinica [illegible]
ly pigmented, lobued tumour in lower t, extending from ary processes to the N. Mixed spindle l round-celled sarma. Pigment conned in large round s. O.N. probably involved	+ T.	—	Negative	In good health, June, 1891, 7 months after operation. Unable to be traced [illegible]
ish tumour of roid in lower part, ching nearly from). to ora serrata. nour composed of ll oval and round). Contains very e pigment. O.N. invaded	+ T. 1	—	Negative	In good health, July, 1891, 8 months after operation.

1. No. of case and *Reg. No.*	2. Name.	3. Eye affected.	4. Age at date of operation.	5. Duration of previous symptoms.	6. Interval between operation and first symptoms of recurrent or metastatic growth.	7. Operation.	8. Duration life after primary operation
103 *3433*	Mrs. T.	L	70	Failure of sight, 6 years, progressed to blindness quickly	—	Enucleation	12 month

In 1898 in Grindelwald are
58 cases traced and
45 whose fate is unknown.
40 were dead in 1891
~~5~~ 12 died bfore 1898
= 52 were dead.
21 have been lost sight of
betwn 1891 & 1898.
~~so that in 1898 =~~
and 24 were lost sight
of bfore 1891 so that
were in hand 45 cases whose fate
is unknown. I am still alive so that gives
40 + 12 = 52 dead
21 + 24 = 45 unknown
Total = 103

In 1891 26 were dead of cancer
In 1898 8 [illegible]
34 deaths from cancer

9. Position, extent, and nature of tumour.	10. Tension of eyeball.	11. Site of recurrent or metastatic growth.	12. Family history.	13. Remarks. Previous injury or disease of eye, &c.
Large irregular-shaped tumour of choroid on nasal side behind equator, and extensive diffuse growth in choroid. Tumour chiefly round-celled, but in front there are spindle-shaped cells. Irregularly pigmented, in some parts deeply. O.N. involved as high as point of section	+ T. 2	Stomach and liver, according to physical signs. No post-mortem examination	Unknown	—

ON THE OPERATIVE TREATMENT OF GLAUCOMA.

By E. Treacher Collins,

Curator of the Museum.

This paper is based upon the pathological examination of 23 eyeballs which had been operated upon for glaucoma. Some of them were originally examined by two former curators of the Museum, Mr. Milles and Mr. Lawford, and I have made use of their notes in the detailed account which I give of each eye. For the specimen and notes of one of the cases I am indebted to Mr. Tweedy, the patient having been operated upon by him in private. In 20 of these 23 eyes an iridectomy had been performed, in 2 a sclerotomy, and in 2 an optico-ciliary neurotomy, one subsequently to an iridectomy. Of the 20 in which an iridectomy was performed—

13 were excised on account of the return of tension, in most accompanied by pain.

3 because they excited sympathetic ophthalmitis (Nos. 5, 13, and 21). In two of these the tension was increased at the time of excision.

1 on account of the escape of the lens and prolapse of the ciliary body. (No. 20.)

1 on account of wound of the lens accompanied by inflammation and pain. (No. 22.)

1 for hypopyon keratitis ten years after the operation, during which time the tension had remained normal. (No. 19.)

And 1 for iritis and pain, the tension having been normal for a year. (No. 23.)

In both the eyes which had been treated by sclerotomy a large cystoid cicatrix had resulted. They were excised on account of pain, the tension of one at the time of excision being noted as full, and that of the other as — 2.

A microscopical examination and comparison of the parts operated on in each of these eyes ought to throw some light on the causes of success and failure in the operative procedures in glaucoma.

I will first summarise the facts concerning those eyes in which an iridectomy was performed.

It is always difficult to fix the duration of chronic glaucoma, the symptoms beginning so insidiously that patients' statements with regard to them cannot be relied on. In six of the cases (Nos. 6, 7, 8, 11, 18, and 21) the glaucoma was absolute at the time of the iridectomy. Cases 13 and 19 seem both to have commenced with a definite acute attack, the former was operated on a month after it and the latter four days. In Case 15 the increase of tension came on while the patient was using atropine for a corneal ulcer, and the operation was performed a month later. The interval between the date of the iridectomy and excision varied considerably. In Case 20 the eye was removed the next day. In Case 7, two days after the iridectomy. In Case 19, ten years after, the tension having remained normal during that time; and in Case 17, fifteen years elapsed between the iridectomy and the excision, during all which time the tension had apparently continued more than normal.

In the descriptions which are given of the microscopical appearances of these eyes, except when specified to the contrary, sections have been taken as nearly as possible from the centre of the coloboma, and in most of the eyes several sections from different levels have been examined, in order, as far as possible, to ascertain the condition of the cicatrix throughout its entire length.

The operation of iridectomy may be divided into two stages; (i.) the incision; (ii.) the excision of the iris. Of late years there has been a tendency to regard the first as the most important; some even holding that the remedial effects of an iridectomy depend solely on the formation of a cicatrix in the sclerotic at the periphery of the anterior

chamber, the cicatricial tissue acting as a sort of filter which allows the exit of the intraocular fluids through its substance, and that the removal of a piece of iris is of very secondary importance. Hence the origin of sclerotomy.

In examining pathologically eyes that have been iridectomised for glaucoma, it can be seen how each of these stages has been carried out. The position and character of the cicatrix in each eye can be determined and compared. The amount of iris which has been removed and the condition of the filtration area in the cornea ascertained.

In order to be able to determine the exact relative position of a cicatrix to the sclero-corneal margin, I have in several recently excised eyes with healthy corneæ made a scratch with a needle through the epithelium at what appeared to be the exact junction of the clear cornea with the opaque sclerotic. I then hardened the eyes and cut sections of them, and found that my scratch corresponded to the usually well-defined termination of Bowman's membrane. The distance of this landmark to a point on the surface of the globe on a level with Schlemm's canal is 1·6 mm., and to a point level with the commencement of the ligamentum pectinatum, *i.e.*, where Descemet's membrane begins to split up, 1 mm.

On account of the obliquity of the line of junction of the cornea and sclerotic it follows that an incision which passed external to the termination of Bowman's membrane and internal to the commencement of the ligamentum pectinatum, would be partly corneal and partly scleral. One which passed internal to the termination of Bowman's membrane would be purely corneal, and one passing through the ligamentum pectinatum almost entirely in the sclerotic.

The iridectomy cicatrices in the eyes which I have examined are nearly all oblique, the gap left in Descemet's membrane on the posterior surface of the cornea being more internal than the commencement of the cicatrix on

the surface of the globe. The amount of obliquity varies considerably, and speaking generally it is more in those cases in which a keratome was used (Nos. 11, 13, 15, 18, and 22) than in those in which the incision was made with a Gräfe's knife.

In only two of the 20 eyes had the incision been made sufficiently peripheral to penetrate the ligamentum pectinatum (Nos. 11 and 20). One of these is the case in which the lens escaped and the ciliary body prolapsed the day following the operation (Fig. 12). In none had the canal of Schlemm been reached.

In one eye the cicatrix was entirely corneal (No. 7). In the remainder, including Cases 19 and 23, where the glaucoma was cured, it was partly corneal and partly scleral.

With regard to the character of the cicatrices, Cases 1, 9, and 18 show good bands of cicatricial tissue well at the periphery of the chamber, the gap left in Descemet's membrane being free for at any rate some portion of its extent from any entanglement of iris (Fig. 10). In these eyes the tension returned and persisted. In Cases 13 and 23 the gap in the sclero-corneal tissue had been prevented from closing by the prolapse of a knuckle of iris into it (Fig. 14). The conjunctiva and episcleral tissue had healed over it thus leaving a transparent cicatrix with a tendency to become cystoid. (I refer again to this subject later in dealing with the cases in which a sclerotomy had been done.) In Case 13 there had been a slight temporary return of tension after the iridectomy, it being normal at the time of excision. In Case 23 the tension remained normal for a year.

Coming now to the second stage, the excision of the iris, I find that in all except four of the cases (Nos. 12, 13, 15, and 21) a portion of the root of the iris had been left, which in all, except Case 19, was adherent to the cornea, blocking the filtration area in the region of the coloboma. In several of the cases also the cut end of the iris had

become healed in the cicatrix, making it additionally secure in its faulty position (Figs. 3 and 5). In Case 19 the root of the iris was not adherent to the cornea, and the angle of the chamber was widely open (Fig. 11). That it is possible to remove the iris quite up to its root is shown by Cases 12, 13, 15, and 21 (Figs. 9 and 13). In the first three of these the glaucoma was acute or of short duration. Presumably the periphery of the iris had not become adherent to, only in apposition with, the posterior surface of the cornea, hence when the iridectomy was done the iris tore away at its root, *i.e.*, at its junction with the ciliary body. In the more chronic cases, where it had become absolutely adherent, it tore, not at its root but at the point where the adhesion ceased.

In six of the cases (Nos. 5, 8, 12, 15, 21, and 22) the lens was slightly altered in its position, there being adhesion between the anterior capsule and the cornea (Figs. 5 and 13). Three of these (Nos. 12, 15, and 21) were cases in which the iris had been removed quite up to its periphery, and in which the tension had returned. The tilting forwards of the lens was probably sufficient to prevent drainage through the filtration area thus opened up. The adhesion in five of the cases was between the upper margin of the lens and the iridectomy cicatrix, in two of which there was a gap in the capsule and some degeneration of the lens fibres opposite the cicatrix (Nos. 21 and 22). In Case 15, where glaucoma followed the use of atropine for a corneal ulcer, the anterior chamber was slow in re-forming, and the lens capsule became adherent to the cornea at the seat of the ulcer.

In two cases (Nos. 13 and 21) there was a gap in Descemet's membrane about the centre of the cornea, and an adhesion passed from the lower part of the iris, near its pupillary border, to it (Fig. 6). In both these cases a keratome was used, and, no doubt, the wound in Descemet's membrane had been made by its point,

which, in order to avoid the lens, had been turned towards it, the iris subsequently becoming adherent. Collections of small round cells scattered throughout the uveal tract, the so-called *uveitis maligna,* were found in seven cases (Nos. 5, 6, 9, 13, 17, 21, and 22).

Case 14 presented a very remarkable condition. There was a large localised collection of blood in the tissue of the iris, on one side of the coloboma, which might be described as a hæmatoma of the iris. Blood had also found its way from the cut surface of the iris, which was entangled in the wound, in between the tissue of the cornea and Descemet's membrane, stripping the latter up for a considerable distance, and forming a large clot between them (Figs. 7 and 8).

In six cases (Nos. 3, 6, 7, 10, 14, and 20) there were hæmorrhages in the retina. Cases which had been lost directly from hæmorrhage following the operation have not been included in this paper.

The two eyes upon which sclerotomy was performed, both developed a cystoid condition of the cicatrix. I

Fig. 1.—Cystoid cicatrix lined by atrophied iris in an eye lost from glaucoma following extraction of cataract.

have examined microscopically several cystoid cicatrices, and I find they are always lined by more or less atrophied

iris tissue. If the cut end of a piece of iris becomes entangled in a wound, the wound closes, the iris being incorporated in the cicatrix. If, however, a fold of iris tissue becomes involved, the anterior surface of the iris unites to the cut edges of the sclero-corneal tissue, the conjunctiva heals over it, and thus a gap becomes left, lined by iris tissue, in the walls of the eyeball. Now, it is known that the iris tissue is impermeable by the intra-ocular fluids; for when the pupil becomes closed by total posterior synechiæ, they accumulate behind it and bow it forwards instead of passing through it. It follows, therefore, that though an eyeball may have a gap in its walls, there can be no escape of its fluids into the sub-conjunctival tissue as long as that gap is lined by impermeable iris tissue. But should there be any tendency to accumulation of fluids in such an eye, the gap, being a weak spot, would yield and expand, the iris tissue lining it would become atrophied and stretched, and breaks would occur in the continuity of its uveal pigment layer, which is probably the chief obstacle to the passage of fluids through it. There would then be the condition of things which I find in Cases 2, 4, 14, and 23, and shown in Figs. 1, 4, 7, and 14. That is a thin bulging or cystoid cicatrix, lined by very atrophied iris tissue, through which any excess of intraocular fluids could pass into the sub-conjunctival tissue. It is not uncommonly observed, and was pointed out by Gräfe, that these cystoid cicatrices periodically discharge themselves sub-conjunctivally, the explanation being that when the accumulation of fluid has reached a certain stage, a rent occurs in the iris tissue which allows of its escape.

Mr. Bader, in the form of sclerotomy which he advocates, seeks to produce a condition such as the above. He says,* "that to secure success it is desirable to obtain, and to maintain, a staphyloma of the conjunctiva, with or without

* Transactions of the International Medical Congress, 1881, vol. iii, p. 98.

prolapse of the iris." De Wecker and most other operators endeavour to avoid a prolapse of any kind.

In order to investigate the immediate results of a sclerotomy, I have performed this operation on several recently excised human eyes, fixed in a Priestley Smith's frame. Under these conditions the operation can be performed with considerable precision. After hardening eyes thus treated, I have cut and examined sections of them. I find that when an incision is made 2 mm. distant from the sclero-corneal margin, if the knife be made to cut nearly perpendicularly outwards, the central part of the ligamentum pectinatum is divided.

In two eyes which were enucleated for absolute glaucoma, upon which I performed a sclerotomy 2 mm. distant from the sclero-corneal margin, I found that my knife had penetrated the iris in two places. Thus, in passing it in, it had pierced conjunctiva, sclerotic, ligamentum pectinatum, and adherent root of iris, and

FIG. 2.—Section showing the immediate results of a sclerotomy incision, the root of the iris being cut across in two places.

had so entered the posterior chamber. Then, in coming forwards into the anterior chamber, it passed through the

iris again, this time from behind forwards (Fig. 2). The iris had been penetrated in the same way in making the counter puncture, and in cutting upwards there was no wound of the lens.

If the root of the iris has become adherent to the cornea over the region of the ligamentum pectinatum, as so often is the case in chronic glaucoma, then, if an incision passes across the ligamentum pectinatum, the iris must necessarily be wounded; and if the root, as is not unusual, is atrophied as well as adherent, it would be almost impossible to wound it without penetrating it. That, in iridectomy, incisions situated internal to the commencement of the ligamentum pectinatum, and made with either a Gräfe's knife or a keratome, the root of the iris may be penetrated, is shown by Cases 21 and 22, in both of which there was a wound in the lens capsule, opposite the incision in the sclero-corneal tissue.

If, in making a sclerotomy incision, the knife passes into the posterior chamber opposite the ligamentum pectinatum, there is less likelihood of its wounding the lens than if it enter it less peripherally, for the anterior of the ciliary process are immediately behind the iris in this region, and serve to protect the lens. Moreover, the edge of the lens does not extend as far outwards as the commencement of the ligamentum pectinatum. This relation of the ciliary process to the iris, in this situation, is the reason that an incision for an iridectomy cannot, with safety, be made so peripheral as to pass through the spaces of Fontana, for when the iris is removed the ciliary processes will readily prolapse into a wound situated thus far out. If they prolapse the fibres of the suspensory ligament inserted into them become drawn forwards, and the lens displaced, and may even escape, as occurred in Case 20.

In another eye, recently excised for absolute glaucoma, I injected water into the anterior chamber through a corneal incision, directing the nozzle of my syringe towards the angle of the anterior chamber, so as to try

and force back, by the stream of water, the iris into its normal position. On subsequently examining sections of this eye, I found that I had opened up the angle of the chamber in a considerable portion of its extent. It remained closed, however, at the upper part, towards which I could not so readily direct my syringe, on account of the position of the incision. No dislocation of the lens, or apparent rupture of the fibres of the suspensory ligament, had been occasioned.

The two eyes upon which optico-ciliary neurotomy had been performed, had both, two years after the operation, to be enucleated, on account of the return of pain. The tension had continued + in both during that time. Case 16 had an ulcer of the cornea when removed. In both eyes the atrophy of uveal tract and retina was very extreme. The structures in front of the equator were less atrophied than those behind it. The lenses in both eyes had remained clear.

From a consideration of these cases I am of opinion that an operation for glaucoma may relieve tension in somewhat different ways.

Starting with the now almost universally accepted assumption that the tension in primary glaucoma, in whatever way it may arise, is kept up by the apposition of the root of the iris to the posterior surface of the cornea, which prevents the exit of the aqueous humour from the anterior chamber into the spaces of Fontana, I infer that an iridectomy may remedy this condition in the following ways:—

(1.) When the apposition is recent, very slight means are sometimes sufficient, the escape of the aqueous and a drag on the iris being enough. It was so, I think, in Case 19, for in it the angle of the anterior chamber was open on both sides of the sections, though a piece of the root of the iris had been left at the iridectomy (Fig. 11).

(2.) In some of the recent and acute cases I have

shown that the iris tears away from its extreme root, thus leaving a large portion of the filtration area free for drainage, even should the remainder of the iris retain its faulty position (Fig. 9).

(3.) In other cases a permanent gap is maintained in the walls of the globe by the prolapse of a fold of iris into the wound. This iris tissue, subsequently, either becomes stretched and atrophied, or ruptures periodically, thus allowing the aqueous to pass through it into the sub-conjunctival tissue, and become absorbed by the lymphatics and vessels situated therein. By these means a new channel for the exit of aqueous is formed, the normal ones remaining blocked (Fig. 14). The tension in Case 23 was cured in this way.

A sclerotomy may produce a permanent reduction of tension in the first or third of the above ways; or it may open up a fresh means of access to the filtration area, by forming a permanent gap in the adherent root of the iris, so that excess of fluid could find a direct channel of exit from the posterior chamber, instead of passing through the pupil into the anterior chamber. It would thus be short-circuited. I have shown that a sclerotomy incision may divide an adherent root of the iris (Fig. 2), and that it must necessarily do so when the iris root is atrophied as well as adherent.

There is, I think, no evidence left in support of the view that scar tissue, whether situated at the sclero-corneal margin or elsewhere, allows filtration through it. *A priori*, it is unlikely that the fibrous tissue of a cicatrix should be any more permeable by fluids than the fibrous tissue of the cornea or sclerotic.

Experimentally, Schœler* has shown that in rabbits' eyes, upon which sclerotomies have been performed, filtration is retarded, not promoted; and that when he increased the pressure in these eyes, the cicatrices remained dry.

* Transactions of the International Medical Congress, 1881, vol. iii, p. 100.

Pathologically, I find in eyes iridecto
good bands of cicatricial tissue, well at
the chamber, free, for some part of their
entanglement of iris, where the tensio
persisted (Fig. 10).

An iridectomy or sclerotomy fails to
when none of the above conditions are
iridectomy may also fail as the result of a
lens to the sclero-corneal cicatrix, so tha
displaced forwards, its upper border blockin
opened up filtration area.

The practical points which may be deduc
cases are the following:—The advisability o
iridectomy for chronic glaucoma in the early s
disease, before the apposition of the root o
the cornea has resulted in adhesion.

I think it would be justifiable in some ca
anticipate events and perform what might b
preventive iridectomy.

Gräfe* stated that "glaucoma simplex aff
without exception both eyes successively."

Mr. Priestley Smith† says: "In the large
cases primary glaucoma is a bilateral affection.

Mr. Nettleship‡ has recently estimated that
thing like two-thirds the disease is sooner or
metrical."

Should, therefore, a patient who had alread
eye affected, present any of the premonitory s
the second eye, the chances of success in an
performed at once under favourable circumstanc
infinitely greater than if it was delayed until a
attack ensued, the depth of the anterior chan
still further diminished, and a peripheral adh
formed. There would in some cases no dou

* R. L. O. H. Rep., vol. vii, p. 104.
† Glaucoma, 1879, p. 5.
‡ R. L. O. H. Rep., vol. xii, p. 79.

tion in the acuity of vision due to corneal
efect easily remedied by glasses.
p* speaking of iridectomy for chronic
" The state of the pupil seems to me to
prognostic guide; in almost all of the
it acted well to eserine." It can easily be
this should be. In an eye with adhesion
the iris to the cornea the pupil would less
t than in one where no such adhesion was
ophy of the iris tissue in glaucoma, and
e uveal pigment at the pupillary margin are
ated. The atrophy of the iris is due to the
of its blood-vessels from pressure of its root
posterior surface of the cornea. When this
been of long standing adhesion takes place.
k it may be taken that an eye having a pupil
ed black ring to it, which will not contract well
s considerable adhesion of the root of the iris
), and is an unfavourable one upon which to
ridectomy for the purpose of relieving tension.
y performed with the intention of making a
ap in the adherent root of the iris would be
to succeed. It sometimes happens that one
e periphery of the iris becomes adherent to the
er than another. This is rendered evident
the pupil becoming eccentric, it being drawn
e side on which the adhesion is, also by the
amber being shallower on the side of the
d by there being more marked ectropion of
gment there. It follows, therefore, that there
re likelihood of the iris tearing away at its root,
omy was performed where there was most iris
ere the anterior chamber was deepest, and
was least ectropion of the uveal pigment, than
e opposite direction.
y† arrived at a similar conclusion. He says:

Rep., vol. xii, p. 97. † R. L. O. H. Rep., vol. ix, p. 224.

"If I may venture to derive from pathology a few suggestions for operative treatment, I shall draw attention to the fact that even where the peripheral marginal corneal adhesion of the iris exists only at one part of its circle, an iridectomy here, which must necessarily leave the periphery of the iris unfreed from the cornea, will not relieve the tension; and therefore I should choose the part where the iris is unadherent."

CASE 1 (*Register No.* 1081).—*Subacute Glaucoma, Iridectomy; return of tension. Excision eight months later. Adherent root of iris left.*

James M., an epileptic, aged 57, was admitted to the Moorfields Hospital, on September 28th, 1882. He stated that ten weeks previously the sight of his right eye failed suddenly It had not been painful until the last ten days. On examination he was found to have subacute glaucoma. T. + 2.V. = p. l. only. His left eye was unaffected.

He was treated with eserine until October 2nd, when the tension being unrelieved, an iridectomy was performed. On October 26th, the T. was noted to be full. On June 1st, 1883, when he was re-admitted to the hospital, he had no p. l. and T. was + 1. The eye was then excised.

Pathological Examination.—Sclerotic bulged slightly at the equator between the recti muscles. Cornea clear, with a cicatrix at its upper margin. Coloboma upwards; lens clear; vitreous healthy; choroid and retina *in situ;* the optic disc cupped.

Microscopical Appearances.—The iridectomy cicatrix is broad; it is situated anteriorly ·8 mm. external to the point of termination of Bowman's membrane, and posteriorly ·2 mm. distant from a corresponding position on the posterior surface of the cornea. The iris has only been removed as far as the cicatrix, the peripheral portion of it being left, which is much atrophied and firmly adherent to the posterior surface of the cornea. There is no adhesion of the cut end of the iris to the cicatrix itself.

The angle of the anterior chamber on the other side of the sections is also closed by peripheral adhesion of iris to cornea. There is marked ectropion of the uveal pigment layer of the iris.

Case 2 (*Register No.* 1112).—*Chronic Glaucoma of ten months' duration. Sclerotomy. Excision one month later. Prolapse of Iris. Cystoid Cicatrix.*

Eliza P., aged 64, was admitted into Moorfields Hospital on April 18th, 1883. She stated that she had had a blow on her left eye from a frying-pan eight years previously, but that she had only noticed failure of sight in it for the last ten months, and pain for the last two weeks.

On examination, the pupil of her left eye was found to be semi-dilated and immobile. The media were hazy. The tension increased, and she could not tell light from darkness with it. Her right eye was not glaucomatous, but had some choroidal changes in it V. $= \frac{6}{36} \bar{c} + 2\,\text{D.} = \frac{6}{12}$.

A sclerotomy was performed on the left. Six days later, the iris was noted as bulging into the wound in its whole extent. The T. was normal.

She was re-admitted to the hospital on May 5th, 1883, complaining of occasional darting pain in her left eye and a dull constant pain in the left half of her head. The cicatrix in the sclerotic was bulging, and the iris prolapsed into it. The T. was full. It was then excised.

Pathological Examination.—The whole of the bulging sclerotomy cicatrix at the upper margin of the cornea is lined by iris. The pupil is semi-dilated and irregular; it is displaced upwards. Iris adherent to the cornea at its periphery in its entire circumference. Lens in its normal position. The vitreous is detached posteriorly; retina *in situ*. Optic disc slightly cupped.

Microscopical Appearances.—The bulging cicatrix is situated some distance external to the termination of Bowman's membrane, but internal to the spaces of Fontana and canal of Schlemm. The whole of the upper part of the iris is involved in the cicatrix; it is much atrophied, and intimately adherent to the cicatricial tissue.

CASE 3 (*Register No.* 1236).—*Subacute Glaucoma, Iridectomy, return of tension. Excision two months later. Large portion of root of iris left, lining a somewhat bulging cicatrix.*

Charlotte P., aged 49, came as an out-patient to Moorfields Hospital on May 1st, 1883, with neuro-retinitis and hæmorrhages in her right eye. On July 5th of the same year the tension of the eye was first noticed increased. She was admitted to the hospital on the 26th, with the vision of her right eye reduced to $\frac{5}{200}$ and T.+2. The left eye was unaffected.

An iridectomy was performed on the right; it was followed by slight hæmorrhage into the anterior chamber, which was soon absorbed. The eye, however, continued painful, and she was re-admitted on September 19th, 1883, with conjunctival injection; some bulging of the cicatrix at the sclero-corneal margin; hyphæma; T. + 2 and V. = shadows only. The eye was then enucleated.

The pathological notes made by Mr. Milles on opening the eyeball after its removal, were as follows:—Cornea clear, some bulging of the cicatrix at its upper margin. Some blood in the lower part of the anterior chamber. Coloboma upwards. Lens clear, adherent at upper equator to the ciliary processes, where it is drawn a little forwards. It is tilted slightly backwards below. Vitreous clear, adherent to retina at places and detached at others. A few hæmorrhages in the retina. Optic disc cupped.

Microscopical Examination shows that the iridectomy incision was fairly peripheral, outside the termination of Bowman's membrane. A broad band of cicatricial tissue, in which are new vessels, has formed in the wound. A large piece of the root of the iris has been left, which is in close contact with the posterior surface of the cornea at its periphery, and probably in great part adherent to it. More of the stroma of the iris has been removed than of the uveal pigment, which is adherent to the cicatrix and lines its posterior surface, where it is notched. The angle of the anterior chamber on the opposite site to the coloboma is closed. The ciliary processes

FIG. 3.—Section of eye in Case 3, showing the large piece of adherent root of iris left after the iridectomy.

are much atrophied. The lens at its upper margin has some rucks in its capsule.

CASE 4 (*Register No.* 1266).—*Acute Glaucoma. Sclerotomy. Excision six years later for pain. Cystoid cicatrix lined by iris tissue.*

Jane P., aged 58, was admitted to Moorfields Hospital on October 19th, 1883. She stated that six years previously, after having had a great deal of trouble, her left eye suddenly became very painful. She also had great pain in the side of her head, and was very sick. She went to an ophthalmic surgeon in London, who operated upon her left eye, after which the pain was relieved for about a year. The last six months it had gradually been getting worse.

On examination there was seen to be a large cystoid cicatrix in the sclerotic at the upper margin of the cornea. No iris could be seen at the upper part. The T. was — 2. V. = bare p. l. V. of the right eye was $=\frac{6}{60}\,\bar{c} + 1\,D.\,\frac{6}{6}$.

The left eye was excised.

Pathological Examination.—The cornea is clear; above its

upper margin is a large bulging scar which is very thin in places, showing the iris through it. The whole of it is lined by iris tissue. None of the iris at the upper part can be seen through the cornea. The anterior chamber is shallow, its angle closed by a peripheral adhesion of iris to cornea. The lens is clear; the vitreous fluid; the optic disc cupped.

Microscopical Appearances.—The iris at the upper part where it lines the bulging cicatrix is much atrophied, its uveal pigment layer is almost all that is left. It is intimately adherent to the cicatricial tissue over-lying it.

FIG. 4.—Section showing the cystoid cicatrix lined by atrophied iris tissue in Case 4.

The cicatrix is situated well to the outer side of the termination of Bowman's membrane. It is, however, internal to the spaces of Fontana and canal of Schlemm. The upper pupillary border of the iris is within the cystoid portion of the cicatrix. There is no inflammatory infiltration of choroid or iris.

CASE 5 (*Register No.* 1750).—*Subacute Glaucoma. Iridectomy, temporary relief of tension. Sympathetic Ophthalmitis commencing about five months later. Lens capsule adherent to corneal cicatrix.*

George McC., aged 63, was admitted into the Moorfields Hospital on September 12th, 1884, with subacute glaucoma in his right eye of six weeks' duration. The tension was + 2, and his vision was reduced to p. l. only. An iridectomy was performed the same day, a Gräfe's knife being used to make the incision. The tension remained normal for some time after the operation. He was re-admitted on March 24th, 1885, when the right cornea was so steamy that the coloboma was barely visible. The tension of the eye was + 2 and he had no p. l. with it. In his left eye, of which he said the sight had been failing about one month, he had keratitis punctata, iritis, and T. + 2. V. of L. E. $= \frac{6}{9}$.

His right eye was then excised.

Pathological Examination.—There is some thickening of the cornea in the neighbourhood of the cicatrix. The iris has been removed at the upper part, but not quite up to its root, and the portion left is adherent to the back of the cornea. There are adhesions of iris to the anterior lens capsule at the cut edges of the coloboma. The peripheral part of the iris is adherent to the back of the cornea, in the whole circumference, blocking the iris angle.

The lens is slightly displaced; its upper edge has come forward, and is adherent to the cornea at the scar. The ciliary muscle shows some fibrous degeneration. The vitreous is detached from the retina posteriorly except at the O.D. There is deep glaucomatous excavation of the O.N., the cup being filled with inflammatory products.

Microscopical Appearances.—There are some collections of small round cells about the scar in the cornea. Its exact situation with reference to the termination of Bowman's membrane cannot be made out, as this point is not well defined. It is internal to the commencement of the ligamentum pectinatum. The iris has been cut on a level with the corneal scar, it is atrophied, thin, and adherent to the cornea. There

is marked ectropion of the uveal pigment layers of the iris, and considerable inflammatory infiltration of its tissue, the cells being collected in little clumps of varying size.

CASE 6 (*Register No.* 1857).—*Absolute Glaucoma of two years' standing. Iridectomy; return of tension. Excision ten days later. Adherent root of Iris left.*

Louisa H., aged 49, was admitted to Moorfields Hospital on June 22nd, 1885. Her left eye had been blind from glaucoma for two years. Recently it had become very painful. Her right eye had been operated on for glaucoma previously The day following her admission an iridectomy was performed upwards on her left eye. She returned to the hospital on July 2nd, 1885, with the eyeball still very painful, and the T. + 3. It was then excised.

Pathological Examination.—The cornea is very hazy, it has a cicatrix at its upper margin. The anterior chamber contains the remains of some old blood clot. A small piece of the iris is absent up and out; the cut extremity is slightly entangled in the cicatrix at the sclero-corneal margin. There are no adhesions between the iris and lens capsule. The ciliary processes appear of normal size. The lens is *in situ*. Vitreous apparently quite healthy. The retina is not detached. The optic disc is deeply cupped.

Microscopical Examination.—The line of the iridectomy incision passes very obliquely through the cornea. There is a small amount of round-celled infiltration about it. Anteriorly it comes to the surface ·64 mm. to the outer side of the termination of Bowman's membrane. Posteriorly the gap left in Descemet's membrane is ·2 mm. to the outer side of this point.

A large portion of the root of the iris has been left where the iridectomy has been done. This is intimately blended with the posterior surface of the cornea and to the cicatrix, thus blocking the angle of the anterior chamber. There are some patches of red blood corpuscles in the substance of the retina, and considerable inflammatory cell infiltration into the tissue of the choroid and ciliary body.

CASE 7 (*Register No.* 1843).—*Absolute Glaucoma for a year. Iridectomy; no relief of tension. Excision two days later. Iridectomy incision very corneal. Root of Iris left.*

Nathaniel K., aged 70, was admitted to the Moorfields Hospital on June 16th, 1885. His left eye had been blind for nearly a year. Fifteen weeks previous to admission he had it "probed with a stick"; since then it had been painful. The sight of his other eye was also failing.

The anterior chambers of both eyes were shallow. The lens in the left was opaque, and the T. + 1. In the right the pupil was active, and the T. doubtfully increased. The same day an iridectomy was performed upwards on the patient's left eye, the incision being made with a Gräfe's knife. Two days after the operation he complained of great pain. He had no perception of light with the eye, and the T. was still + 1. It was then excised.

Pathological Examination.—There is a partially healed operation wound at the upper margin of the cornea, extending just into the sclerotic at one extremity. The anterior chamber contains some blood. A portion of the upper part of the iris has been removed; the cut edge is adherent to and slightly entangled in the wound. The lens is opaque throughout, and soft in consistency. The vitreous is clear, the hyaloid being very adherent to the retina.

The retina is *in situ;* it is covered by extensive hæmorrhages. The optic disc is cupped.

Microscopical Examination.—The line of incision in the cornea passes nearly vertically through it at right angles to its surface. In sections passing through the centre of the incision it is seen to be situated ·72 mm. within the point where Bowman's membrane ends. A plug of blood clot fills the upper part of it, and the surface epithelium dips down a little way into it. A portion of the root of the iris has been left at the seat of iridectomy, and this passes forwards into the gap left in Descemet's membrane. It is in close contact with the posterior surface of the cornea, thus blocking the angle of the anterior chamber in this position. Large numbers of red blood corpuscles are disseminated throughout the substance of the retina.

CASE 8 (*Register No.* 2340).—*Absolute Glaucoma. Iridectomy; return of tension. Excision a year later. Ciliary processes and lens capsule adherent to wound.*

Maria A., aged 69, was admitted to Moorfields Hospital on May 18th, 1886. The sight of her left eye had been failing three years, that of her right eye one year. Both anterior chambers were shallow. In the right the pupil was active, V. $= \frac{6}{60}$ and T. + 1. In the left the pupil was semi-dilated and inactive; V. = no p. l. and T. + 2. An iridectomy was performed on the right, and the tension in it has continued normal since the operation, her vision with a spherico-cylindrical glass being equal to $\frac{6}{18}$. On June 12th, 1886, an iridectomy was performed on her left for relief of the pain. A month later there was congestion about the wound, the iris was discoloured, and a small hypopyon formed. The tension continuing increased, and the pain persisting, the eye was excised on June 1st, 1887.

Pathological Examination.—The cornea is semi-opaque. The scar of the iridectomy incision, just beyond the margin of the cornea, slightly prominent. The iris is absent at its upper part, being removed well up to its root. The lens is slightly tilted forwards at its upper part, and in contact with the cornea and anterior part of the ciliary body. The optic disc is deeply cupped and excavated.

Microscopical Appearances.—The iridectomy scar, which is well healed, is situated ·92 mm. external to the termination of Bowman's membrane anteriorly, and ·8 mm. external to a corresponding point posteriorly. The tips of the ciliary processes are adherent to its posterior surface, and they, together with a small piece of the iris that has been left at the iridectomy, completely block the angle of the anterior chamber above. Adherent to the posterior corneal surface over the scar, and passing to the upper margin of the lens and downwards to the anterior lens capsule, is a thin layer of organised inflammatory tissue, and between it and the anterior capsule a small quantity of blood clot. The iris on the opposite side of

FIG. 5.—Section showing iridectomy cicatrix in Case 8, with root of iris and ciliary processes adherent to it completely blocking the filtration area.

the sections to the coloboma is in contact with the cornea at its periphery; its root is somewhat atrophied. There is marked vacuolation of the corneal epithelium.

CASE 9 (*Register No.* 2370).—*Chronic Glaucoma of three years' duration. Iridectomy; return of tension. Excision eight months later. Small adherent root of Iris left.*

Ann G., aged 61, was admitted to the Moorfields Hospital on October 30th, 1886, with chronic glaucoma of both eyes. Her left was quite blind, the sight in it having commenced to fail three years previously. Her right had not been affected so long, but the failure of sight had been more rapid. An iridectomy was performed on both eyes, a Gräfe's knife being used. She was subsequently re-admitted on July 5th, 1887, stating that she had had pain in her eyes ever since the operations, more especially in the left. The T. in the left was + 3; V. = no p. l. In the right the T. was + 1 and V. = Hand Reflex.

The left eye was then enucleated.

Pathological Examination.—The cornea is slightly hazy; the scar of the iridectomy incision at its upper part is just inside the sclero-corneal margin. The anterior chamber is very

shallow. There is a narrow coloboma of the iris upwards; the iris at the angles is not entangled in the cicatrix. The lens is clear and *in situ*. The vitreous is normal; retina not detached.

Microscopical Examination.—The line of cicatrix in the cornea passes vertically through it at right angles to its surface. It is situated ·52 mm. outside the termination of Bowman's membrane. The iris has been removed almost up to its extreme root, but a small portion has been left, which is intimately adherent to the posterior surface of the cornea, and is just sufficient to block the filtration area. In one section the cut end of the iris is adherent to the gap left in Descemet's membrane at the seat of the cicatrix. In the other sections there is no such adhesion. The angle of the anterior chamber on the opposite side to the coloboma has evidently been closed, but the root of the iris has now been partially torn away, probably as the result of manipulation in mounting the specimen.

There are several clumps of small round cells throughout the choroid.

Case 10 (*Register No.* 2443).—*Acute attack supervening on Chronic Glaucoma of eight months' duration. Iridectomy; return of tension. Excision two months later. Adherent root of Iris left.*

William H., aged 58, was admitted to Moorfields Hospital on August 4th, 1887. Twelve months before, he first noticed some slight irritation about his right eye. In the previous December the sight had begun to fail, and had been steadily getting worse since. A week before admission, he was seized in the night with severe pain in the right eye and temple, which had persisted. There was some general injection of his right eye. The cornea was steamy; the anterior chamber shallow; the pupil semi-dilated and inactive. He could only distinguish light from dark with it, and the T. was + 2. In his left eye the disc was slightly cupped. V. was $= \frac{6}{6}$ Tn.

The next day a small iridectomy was performed upwards on his right eye, the incision being made with a Gräfe's knife. The anterior chamber became filled with blood.

On August 9th the T. was noted as + 2. He was re-admitted on October 6th, with the eye very painful; no p. l. and T. + 2. It was then excised.

Pathological Examination.—The cornea is dull. The cicatrix at its upper margin is bulging slightly. The anterior chamber shallow. The coloboma in the iris is narrower at its periphery than at the pupillary margin; it does not extend up to the root of the iris. The lens is clear and *in situ*, it is not pressing on the ciliary processes in any part. The vitreous is normal. The optic disc deeply and widely cupped; in the retina near it are a number of large irregular-shaped hæmorrhages.

Microscopical Appearances.—The line of the iridectomy cicatrix is situated a little to the outer side of the termination of Bowman's membrane, ·32 mm. anteriorly, ·16 mm. posteriorly. It passes nearly vertically downwards at right angles to the surface of the cornea. A large portion of the root of the iris has been left in the situation of the iridectomy. Its cut end is attached to the cicatrix in the cornea. The peripheral part is intimately adherent to the posterior surface of the cornea, thus blocking the angle of the anterior chamber in the region of the coloboma. The root of the iris on the opposite side of the sections is also adherent to the cornea for some distance. There is marked ectropion of the uveal pigment, and marked atrophy of the ciliary processes.

CASE 11 (*Register No.* 2478).—*Chronic Glaucoma of two years' duration. Absolute for three months. Iridectomy; return of tension. Excision eight months later. Iridectomy incision very peripheral, root of Iris left.*

William B., aged 65, was admitted to Moorfields Hospital on March 15th, 1887. The sight of his left eye had been failing two years. He had been unable to tell light from dark with it for the last three months. He had old ciliary blepharitis on both sides. His left lower canaliculus had been slit. There was a well-marked arcus senilis in each cornea, and opacities in both his lenses. In his left eye the pupil was inactive, and the fundus could not be seen. He had no p. l. with it, and T. was

+ 2. In his right eye the pupil was active, and the fundus could be plainly seen. V. was $= \frac{6}{24}$ Hm. 1·5 D. $\frac{6}{6}$ partly; T. n.

On the day following his admission, an iridectomy was performed upwards on his left, a keratome being used. On March 28th, twelve days later, the tension was + 2. It continued increased, and in November of the same year the eye became inflamed and painful, and was excised on the 23rd of that month.

Pathological Examination.—The cornea is hazy, and at the upper part there is a vesicle on its surface. Just beyond the upper margin of the cornea there is some thickening of the conjunctiva corresponding to the seat of the iridectomy incision. The anterior chamber is fairly deep. The iris, at its upper part, is absent. The lens is in its normal position; there is some slight haze about its posterior capsule. The vitreous is of good consistency, and quite clear. The retina is *in situ*, its vessels look small. The optic disc is slightly cupped. The choroid has a small patch of disturbance of pigment in it in the region of the yellow spot.

Microscopical Appearances.—The iridectomy cicatrix is very peripheral, being situated 2 mm. outside the termination of Bowman's membrane anteriorly, and 1·4 mm. from a corresponding spot posteriorly. The inner portion of the ligamentum pectinatum has been penetrated. A small portion of the root of the iris has been left at the seat of the iridectomy, and this is intimately adherent to the posterior surface of the cornea. Its cut extremity, and the tips of the most anterior of the ciliary processes pass just into the gap left in Descemet's membrane, at the posterior surface of the iridectomy incision. The lower angle of the anterior chamber is now open, probably as the result of manipulation in mounting the specimen. No hæmorrhages are seen in the retina.

CASE 12 (*Register No.* 3003).—*Subacute Glaucoma. Iridectomy; return of tension. Excision four weeks later, very peripheral incision. Iris removed quite up to its root. Lens capsule adherent to wound.*

Richard S., aged 75, came as an out-patient to the Moorfields Hospital on October 16th, 1889. He stated that he had

noticed gradual failure of sight in his right eye for six months, and in his left for one month. He had been subject to neuralgia on the left side of his face for fourteen years.

There was slight injection of his right eye, none of his left. The anterior chamber in both was decidedly shallow. The left pupil was more active to light than the right. There were mature cataracts in both eyes. V. of right = p. l.; projection good; T. + $1\frac{1}{2}$. V. of left = fingers at 3 feet; T. full.

On October 23rd an iridectomy was performed upwards on both eyes, a Gräfe's knife being used for the right, and a keratome for the left. A week later the T. of right was noted as — 1, and of the left as low normal. The right was much congested, there was blood in the anterior chamber and in the coloboma.

On November 12th, *i.e.*, nineteen days after the operation, the T. of right was full, it was still injected, but the patient complained of no pain.

On November 19th, the T. of right was + 2. V. = p. l. only. There was haze of cornea, lymph on the iris, and much circumcorneal injection. It was then excised.

Pathological Examination.—The cornea is hazy, a cicatrix at its upper margin passes obliquely through it, and is well healed. The aqueous is turbid, and there are some blood clots in the lower part of the anterior chamber. The anterior capsule of the lens is adherent to the posterior surface of the cornea in the region of the iridectomy cicatrix. The vitreous is thin in consistency, and detached posteriorly from the retina. The retina is *in situ*. The optic disc deeply cupped.

Microscopical Appearances.—In preparing the specimen for cutting microscopical sections, the parts got considerably displaced, owing to the celloidin being allowed to shrink by too long exposure to the air. In this way the attachment of the lens capsule to the iridectomy cicatrix above mentioned became torn through.

The cicatrix, which is very oblique, is situated anteriorly 1·6 mm. external to the termination of Bowman's membrane, and posteriorly ·92 mm. external to a level with the same point.

A wide plug of semi-organised cicatricial tissue fills up the wound; some of it projects through the gap in Descemet's

membrane, and no doubt was adherent to the anterior capsule of the lens.

The iris has been removed right up to its root; a small portion of its anterior layers, however, which had become intimately incorporated with the corneal tissue in the region of the ligamentum pectinatum, has been left.

The angle of the anterior chamber on the opposite side of the sections has evidently been closed, but is now torn open.

The lens shows several tracks of hyaline globules between its laminæ in the cortical parts, no perforation in its capsule can be seen.

Case 13 (*Register No.* 3028).—*Acute Glaucoma. Iridectomy, slight temporary return of tension. Three months later sympathetic ophthalmitis in other eye. A peripheral partially-healed cicatrix with a piece of detached iris incarcerated in it.*

Maria M., aged 60, was admitted to Moorfields Hospital on October 2nd, 1889. A month previously she had had a bad attack of neuralgia and vomiting, and completely lost the sight of her right eye. It was on her admission somewhat injected, the anterior chamber was shallow and the pupil semi-dilated and inactive. The T. + 3, V. = p. l. only.

In her left eye V. was $= \frac{6}{24}$ Hm. 2·5 D. $\frac{6}{9}$ $\bar{c}$ + 6 D. Ji. T. full.

An iridectomy was performed upwards on her right, the incision being made with a keratome.

On November 13th, about six weeks later, it was noted that there was some circumcorneal injection; that the eye was painful, and that the tension was increased.

She was re-admitted to the hospital on January 1st, 1890, with injection and keratitis punctata of her left eye, also posterior synechiæ, and patches of uveal pigment and lymph on the anterior capsule of the lens. There was no keratitis punctata in the right eye. It was injected, and there was a small piece of iris adherent to the upper and outer part of the corneal cicatrix. The T. was n. V. = no p. l. The right eye was then excised.

Pathological Examination.—The epithelium of the cornea is hazy; there is a cicatrix at its upper margin. The angle of the anterior chamber is evidently closed elsewhere than in the coloboma. The lens is in its normal position and healthy. The vitreous, of good consistency, has the remains of an old hæmorrhage in its lower part over the ciliary body. The retina is *in situ*. The optic disc deeply cupped.

Microscopical Appearances.—The scar of the iridectomy is situated 1 mm. outside the termination of Bowman's membrane anteriorly, and about on a level with this point posteriorly. It has not healed throughout its whole thickness, only superficially. A piece of folded iris detached from the ciliary body is incarcerated in it. At the inner lip of the posterior surface of the iridectomy incision is some loose fibrous tissue, to which a fibre of the suspensory ligament is attached. About the centre of the posterior surface of the cornea is a gap in the continuity of Descemet's membrane, from which a slender adhesion passes to the lower part of the iris near its pupillary

FIG. 6.—Section showing an anterior synechia of the lower part of the iris near its pupillary border in Case 13, caused by a wound of Descemet's membrane with point of the keratome.

border. Hardly any of the root of the iris has been left at the seat of the iridectomy adherent to the periphery of the cornea. The angle of the anterior chamber is considerably constricted on the opposite side.

There is a slight amount of inflammatory infiltration in the

ciliary body. The optic nerve is much sclerosed; there is some hypernucleation of it immediately posterior to the lamina cribrosa.

CASE 14 (*Register No.* 3071).—*Acute Intermittent Glaucoma. Iridectomy, return of tension, bulging of cicatrix. Excision a fortnight after the iridectomy. Descemet's membrane stripped off cornea by hæmorrhage from iris between them.*

Jane R., aged 62, was admitted to the Moorfields Hospital on February 4th, 1890, with acute glaucoma in her left eye. She stated that she first had an attack of pain and dimness of sight a year previously. At that time she saw rainbow-coloured rings around lamps. The eye got better, but recently the same symptoms had recurred.

An iridectomy was performed upwards, a Gräfe's knife being used to make the incision. The anterior chamber immediately became filled with blood.

On February 11th, a week after the operation, the tension was found to be still increased. The cicatrix was bulging, the blood in the anterior chamber was less.

On February 18th, the tension still being increased and the eye painful, it was excised.

Pathological Examination.—There is a partly healed and slightly bulging cicatrix at the upper sclero-corneal margin. A recent blood clot appears to nearly fill the anterior chamber. There is a coloboma upwards, but a large portion of the root of the iris has been left. On one side of the coloboma, a

FIG. 7.—Section of eye in Case 14, showing prolapse of a knuckle of iris near its root, the first stage in the formation of a cystoid cicatrix.

knuckle of the iris, near its root, has prolapsed into the cicatrix. The lens is in its normal position and appears

healthy. The retina is *in situ;* there are some hæmorrhages in it. The optic disc is deeply cupped.

Microscopical Appearances.—The line of the iridectomy incision is situated ·6 mm. external to the point where Bowman's membrane ends anteriorly, and ·2 mm. internal to a corresponding point posteriorly. The large portion of the root of the iris which has been left at the seat of the iridectomy completely blocks the angle of the anterior chamber above. It is also closed on the opposite side. There is a large collection of red blood corpuscles sub-conjunctivally in the region of the cicatrix. There has also been a large hæmorrhage into the

Fig. 8.—Section showing large hæmorrhage into substance of iris, and blood clots between Descemet's membrane and tissue of cornea, in Case 14.

tissue of the iris on one side of the coloboma. Blood has passed from the cut iris into the gap left in Descemet's membrane at the iridectomy incision, and from there between the substance of the cornea and Descemet's membrane, stripping this latter off, and forming a large clot between it and the fibrous tissue of the cornea.

There are numerous various sized hæmorrhages in the retina, also in the suprachoroidal lymph space at its lower and anterior part. The blood vessels of the retina have very thickened walls.

Case 15 (*Register No.* 3119).—*Subacute Glaucoma following the use of atropine for a corneal ulcer. Iridectomy, return of tension. Iris removed quite up to root. Adhesion of lens capsule to cornea at seat of ulcer.*

Mary H., aged 40, came as an out-patient to Moorfields Hospital on November 2nd, 1889, with an ulcer of her right cornea. Atropine drops were prescribed, which she used until November 20th, when she came with considerable injection of the eye, a widely dilated pupil, and T. + 1. Eserine drops were then substituted for the atropine, but the tension was not quite reduced to normal by their use. On January 15th, 1890, an iridectomy was done upwards, a keratome being used to make the incision. The ulcer at that time was only partially healed. After the operation the anterior chamber was slow in re-forming, and when it did re-form it remained shallow. The tension returned, and she was re-admitted on March 7th with V. reduced to hand reflex and T. + 2. A scleral puncture was then tried, but proved unsuccessful in relieving tension. The eyeball being very painful, it was excised on May 3rd.

Pathological Examination.—There is some bulging of the globe equatorially between the insertions of the superior and internal recti muscles. The cornea has a small central opacity in it; the lens is adherent to it at the seat of the opacity, being tilted forwards on its inner side. The pupil is dilated. There is a wide coloboma of the iris upwards, the iris having been removed well up to its periphery. The retina is *in situ*. The optic disc is cupped.

Microscopical Appearances.—The line of the iridectomy incision passes very obliquely through the cornea, being 1·8 mm. external to the termination of Bowman's membrane anteriorly,

Fig. 9.—Section showing that iris has been removed quite up to its extreme periphery in Case 15. Line of incision very oblique.

and only ·2 mm. external to a point on a corresponding level posteriorly.

There is very little cell infiltration about it, the iris has been removed quite up to its extreme periphery, the filtration area being well opened up.

CASE 16 (*Register No.* 3192).—*Absolute Glaucoma. Optico-ciliary neurotomy for the relief of pain. Return of pain and excision two years later.*

Lucy F., aged 68, was admitted as an in-patient to the Moorfields Hospital on July 30th, 1888, with absolute glaucoma in her right eye, which had commenced nine weeks previously with acute pain. Her left eye showed no symptoms of glaucoma. V. was $= \frac{6}{6}$.

An optico-ciliary neurotomy was done on her right eye, after which the globe protruded considerably. A fortnight later the eyeball had nearly regained its normal position. The pain was less, but the T. was still + 3.

On July 23rd, 1890, she was re-admitted, pain having again set in, in her right eye. The cornea was hazy and ulcerated, and the T. + 3. It was then excised.

Pathological Examination.—An antero-posterior vertical section was made of the eyeball. The angle of the anterior chamber is firmly closed by an extensive peripheral adhesion of the root of the iris. The lens is clear. The retina *in situ*, and the optic disc deeply cupped.

Microscopical Appearances.—The epithelium on the anterior surface of the cornea is very thick, in one place it is separated from Bowman's membrane by some loose fibrous tissue. The excavation of the corneal tissue at the seat of ulceration is not very deep. There is some round cell infiltration throughout the superficial layers of the cornea, becoming very dense at the seat of ulceration. On the inner surface of the cornea is some granular material and round cells. The iris has its anterior endothelium much thickened, and every here and there raised, forming little blebs. There are also circular spaces lined by endothelial cells in the substance of the iris, evidently dilated lymphatics. The whole stroma of the iris, the ciliary processes,

and ciliary muscle are much atrophied. There are numerous cystic spaces in the retina behind the ora serrata. It and the choroid behind the equator show extreme atrophy.

CASE 17 (*Register No.* 3158).—*Chronic Glaucoma. Iridectomy, return of tension. Excision fifteen years afterwards. Adherent root of iris left, extreme atrophy of ciliary body and iris.*

Frederick P., aged 42, was admitted to the Moorfields Hospital on February 2nd, 1875, with chronic glaucoma in his right eye, said to be of six weeks' duration. He could just see to count fingers with it; his other eye was unaffected. An iridectomy was performed upwards, a Gräfe's knife being used to make the incision. On his discharge, a note was made stating that there was still some increase of tension, and that the cicatrix had a tendency to bulge.

He returned to the hospital in June, 1890, and said he had been unable to tell light from dark with the eye since the operation. His left eye had remained good. There was then some conjunctival injection of the right, and a clear corneal ulcer. The lens was cataractous. T. full, V. = no p. l. It was then excised.

Pathological Examination.—There is a general mottled superficial haze of the cornea, a facetted surface about its centre, and the scar of an iridectomy incision at its upper margin. The iris is very much atrophied, there being only a narrow rim at the pupillary border which is not adherent to the posterior surface of the cornea. It is absent above. The vitreous is shrunken. The retina *in situ*. The optic disc is deeply cupped and excavated.

Microscopical Appearances.—The line of the iridectomy incision is very oblique, anteriorly it is situated external to the termination of Bowman's membrane. This point, however, is not sufficiently well defined to allow of any accurate measurement of the distance from it. A small portion of the root of the iris, much atrophied, has been left blocking the filtration area in the region of the coloboma. The ciliary muscle, ciliary processes, and iris are all extremely atrophied. The uveal pigment covers the whole of the anterior surface of the iris that

is free. There are some patches of round cell infiltration in the ciliary body and iris.

CASE 18 (*Register No.* 3246).—*Absolute Glaucoma. Iridectomy, return of tension, optico-ciliary neurotomy. Excision six months after iridectomy. Adherent root of iris left.*

Charles M., aged 44, came first as an out-patient to Moorfields Hospital on October 1st, 1887. He then had no perception of light with his right eye. The pupil was semi-dilated and inactive. The cornea hazy. The tension of both it and of the left was noted as doubtfully increased. The vision of his left was $= \frac{6}{36}$, the pupil of it was active and optic disc cupped. On April 14th, 1888, he came complaining of pain in his right eye, it was then much injected, and the T. + 2. The T. of L. + 1. An iridectomy was performed at once on the right, and three days later on the left also, a keratome being used to make the incisions. Three months after these operations the tension of the right was noted to be + 2, and of the left + 1. Pain continuing in the right and the patient refusing to have it excised, on September 19th, 1888, an optic-ciliary neurotomy was performed, a piece of the nerve being removed.

On October 15th, 1890, pain having again returned, the T. being + 3, the eye was enucleated.

Pathological Examination.—There is considerable adhesion of orbital tissues to the globe. There is a well-healed peripheral iridectomy incision at the upper sclero-corneal margin. A small piece of the root of the iris has been left in the region of the coloboma, which adheres to the posterior surface of the cornea. The angle of the anterior chamber on the opposite side to the coloboma is also closed. The lens is *in situ* and apparently healthy. The vitreous somewhat shrunken. The optic disc exceedingly deeply cupped and very white. The choroid is much atrophied, the sclerotic showing through for a wide area around the optic disc. The retina is pigmented in the equatorial region.

Microscopical Appearances.—The iridectomy cicatrix is situated anteriorly 1·5 mm. outside the termination of Bowman's layer, and posteriorly ·96 mm. external to a cor-

responding point. In two of the three mounted sections the gap in Descemet's membrane is quite free from any entanglement of iris; in the third there is a slight adhesion which, however, in no way fills up the gap. The small portion of the root of the iris which has been left at the iridectomy completely

Fig. 10.—Section showing the iridectomy cicatrix in Case 18, very peripheral and free from any entanglement of iris. Filtration area blocked by adherent root of iris.

blocks the angle of the chamber above. The angle on the other side is also restricted. The ciliary muscle and processes are extensively atrophied, as also are the choroid and retina. At the posterior part of the globe, the elastic lamina is all that can be made out of the former, and a strand of fibrous tissue of the latter, with a few uveal pigment cells scattered here and there. At the equator, and anterior to it, more retinal tissue is left, and there are cystic spaces in it.

Case 19 (*Register No.* 3252).—*Acute Glaucoma. Iridectomy, relief of tension. Excision ten years later for ulcer of cornea with Hypopyon.*

Susan H., aged 57, was admitted to the Moorfields Hospital on June 5th, 1880. She stated that four days previously at 11 p.m. when going to bed she was suddenly taken with severe pain in the forehead, and that in the course of an hour the sight of her right eye had almost gone. That it had continued in that condition up to the present time.

On examination, the right eye was found to be injected, the anterior chamber was shallow, and the cornea hazy. V. was reduced to p. l. only, T. was + 2. The left eye was then unaffected. An iridectomy was at once performed on her right, a Gräfe's knife being used to make the incision. A fortnight later she got an acute attack of glaucoma in the left, and an iridectomy was done on that also. The note with reference to her right eye on her discharge from the hospital three weeks after admission, states :—T. n., dark pigment spot at each end of wound; good coloboma upwards, O.D. healthy with physiological cup.

She subsequently came as an out-patient on May 29th, 1889, when the condition of her right eye was described as follows :— R. V. $= \frac{6}{60}$ spells J. 20. A diffuse milky opacity of upper half of cornea. A medium coloboma upwards; a. c. very shallow. Iris grey, motionless, and atrophic, so much so that downwards between its pupillary margin and periphery it can be readily seen through, looking as though there was a ring of pigment on lens. The anterior lens capsule shows an opacity at its centre. The fundus is dimly seen, it appears normal, no cupping. T. n.

On October 15th, 1890, she came complaining of pain, which she stated had come on lately in her right eye. There was no congestion and no tenderness. The lens had become quite opaque and the cornea was dull. T. n.

A fortnight later it had become much worse, there was a central ring-abscess or ulcer of the cornea, and diffuse hypopyon. The lids were very œdematous, the eyeball very tender, and T. full. It was then excised.

Pathological Examination.—There is a central facetted yellow ulcer of the cornea; general haze and an iridectomy cicatrix at the upper margin.

A small portion of the root of the iris has been left at the iridectomy. The lens is normal. The vitreous clear; slightly shrunken. The retina *in situ*. The optic disc is slightly cupped, but not excavated.

Microscopical Appearances.—The iridectomy scar passes nearly vertically through the corneal tissue; it is situated ·56 mm. external to the point of termination of Bowman's membrane

anteriorly, and ·2 mm. external to a point on a corresponding level posteriorly. There is some round cell infiltration about the cicatrix which looks recent. The ulceration of the cornea is superficial; there is, however, considerable round cell infiltra-

Fig. 11.—Section showing the angle of the anterior chamber open in Case 19, though a small portion of the root of the iris has been left after the iridectomy.

tion between the laminæ about its base (Fig. 11). The small portion of the root of the iris which has been left at the iridectomy, is not in contact with the cornea, so that the angle of the anterior chamber is widely open. On the opposite side it is also open, but not so widely, and has probably at one time been closed, as there is a bend in the iris near its root.

Case 20 (*Register No.* 3269).—*Glaucoma for two months. Iridectomy. Escape of lens and prolapse of ciliary body on the following day.*

Mary F., aged 67, was admitted to the Moorfields Hospital on November 8th, 1890. She stated that the sight of her right eye had been dim for two months, that it had been painful and that she had seen coloured rings around lights with it for about one month. The T. was found to be + 2, and vision reduced to hand-movement. The T. of her left eye was normal, but the optic disc was slightly cupped.

An iridectomy was performed on the right two days later, under an anæsthetic, a Gräfe's knife being used to make the incision. The following day the lens escaped.

The eyeball was excised on November 15th, five days after the iridectomy.

Pathological Examination.—The globe is flaccid, there being a gaping, very peripheral iridectomy incision at the upper part. The vitreous is presenting through it. The lens is absent. There are some blood clots in the anterior chamber. The retina was probably *in situ* previous to enucleation; it has a small amount of blood clot on its inner surface. The optic disc is cupped.

Microscopical Examination.—The iridectomy incision is nearly vertical; it is situated 1·68 mm. external to the point of termination of Bowman's membrane anteriorly, and 1·36 mm. external to a corresponding spot on the posterior surface posteriorly. It passes through the inner portion of the ligamentum pectinatum, but is internal to the canal of Schlemm.

Fig. 12.—Section showing prolapse of ciliary body into the iridectomy wound in Case 20.

The anterior portion of the ciliary body, and some of the torn fibres of the suspensory ligament, are prolapsing into the wound. The angle of the anterior chamber on the opposite side to the iridectomy is firmly closed; there is some atrophy of the root of the iris.

CASE 21 (*Register No.* 3380).—*Absolute Glaucoma. Iridectomy; temporary relief of tension. Sympathetic Ophthalmitis. Lens wounded and adherent to cornea.*

Elizabeth H., aged 63, came as an out-patient to the Moorfields Hospital on September 8th, 1890, with no perception of light with her left eye, the anterior chamber being shallow, and the T. + 2. In her right V. $= \frac{6}{24}$, the field was contracted, T. n., there was atrophy of the choroid, but no cupping of the disc.

On February 23rd, 1891, her left eye having become inflamed and painful, an iridectomy was performed, the incision being made with a Gräfe's knife. She was discharged ten days later with the pain relieved, the T. n. and the anterior chamber of good depth. On re-admission in April, 1891, she stated that during the previous week she had noticed that the vision of her right eye was "getting smoky," and that black specks floated in front of the eye. She had had no pain in either eye.

On examination there was found to be some deep injection of the ciliary region, and some slight engorgement of the conjunctival vessels in her left eye. The anterior chamber was of good depth, and there did not appear to be any entanglement of iris in the corneal cicatrix. There was a milky nuclear opacity of the lens. T. + 1. V. = no p. l.

There was no injection of her right eye, but numerous posterior synechiæ; pigment on the anterior capsule of the lens, and dots of keratitis punctata over the lower half of the cornea. V. $= \frac{6}{36} \bar{c} - 2{\cdot}5$ D. $\frac{6}{18}$. T. full.

The left eye was then excised.

Pathological Examination.—The iridectomy cicatrix situated at the upper sclero-corneal margin is slightly oblique. Adherent to its posterior surface is the lens, which is tilted so that its upper margin projects forwards. The angle of the anterior chamber is closed below by the root of the iris. The vitreous is much shrunken and detached at its lower part; it has some old blood clots in it. There is a patch of atrophy in the choroid in the equatorial region in the outer half. The O.D. is deeply cupped and excavated.

Microscopical Appearances.—The line of the corneal cicatrix is situated anteriorly ·8 mm. external to the termination of Bowman's membrane, and the gap in Descemet's membrane is ·3 mm. external to a point on the same level posteriorly. In this gap is some organised inflammatory tissue, which attaches the lens to the cornea. There is a break in the continuity of the lens capsule at this point, and some proliferation of its epithelium and collection of hyaline globules between the fibres

FIG. 13.—Section showing adhesion of lens capsule to iridectomy cicatrix in Case 21.

of the lens. The iris has been removed well up to its root, and in some sections it is quite absent right up to the ciliary body. There is a peripheral adhesion of iris and cornea on the side of the sections opposite to the iridectomy. In a section taken on one side of the coloboma there is an entanglement of the iris in the cicatrix.

There are patches of round cell infiltration in the iris and ciliary body, and the choroid is infiltrated with inflammatory cells in patches right up to the O.D. There is considerable atrophy of the ciliary muscle and processes. The optic nerve shows inflammatory infiltration up to its point of section.

CASE 22 (*Register No.* 3392).—*Intermittent Glaucoma for six months. Iridectomy, wound of lens. Excision seven weeks later.*

Mary Ann B., aged 43, was admitted to the Moorfields Hospital on February 3rd, 1891, when the following notes were taken by Mr. Donald Gunn, the Senior House-Surgeon.

Patient states that her left eye, several times during the last six months, has come over dim after doing a day's washing. This dimness has generally been accompanied by pain on that side of the face and head. Recovery was complete until a month ago, since then she has had much pain, and been very ill. Right eye came bad with fog and pain a week ago.

State on admission.—Spasmodic entropion of both lower lids and general injection. Both corneæ steamy, and anterior chambers very shallow. Pupils dilated, irregular, and fixed. No details of either fundus seen, only a red reflex. V. of R. = Fingers at 18″, T. + 1. V. of L. = Fingers at 12″ T. + 1 to 2.

The following day an iridectomy was performed on each eye, a keratome being used for the incision in both. In the left the iris was seen to be penetrated from behind near its ciliary margin by the keratome. A good sized piece of iris was removed from each eye.

On February 7th, three days after the operation, the lens of the left was noticed to be getting opaque.

She was re-admitted on April 21st, 1891, on account of pain in her left temple and occiput. The condition of the left eye at that time was described as follows:—Coloboma upwards small. Iridectomy scar in cornea pigmented. Iris adherent to a small scar in the centre of the posterior surface. Lens cataractous, T. n. Vision, bare p. l. only. It was then excised.

Pathological Examination.—The iridectomy cicatrix at the upper sclero-corneal margin is but partially healed. It is somewhat depressed backwards, the lens, which is opaque and shrunken, especially at the upper part, being adherent to it. The margin of the coloboma is irregular; an opaque membrane fills it. There is a small adhesion between the lower part of the iris, near its pupillary border, and the posterior surface of the cornea about its centre. Also a peripheral adhesion of the iris. The vitreous is of fairly good consistency. The retina *in situ*, and the optic disc cupped.

Microscopical Appearances.—In sections taken through the centre of the coloboma there are seen to be two cicatrices at the upper sclero-corneal margin. The more internal has now a direction backwards, and slightly outwards; it is only healed superficially, and has a piece of iris incarcerated in it. The more external one is directed backwards and inwards; it is also

only healed throughout a portion of its extent. The outer one is certainly external to the termination of Bowman's membrane, and internal to the commencement of the ligamentum pectinatum, but the precise distance it is from them cannot be determined. The explanation of there being two cicatrices probably is that when the keratome was seen appearing through the iris from behind forwards, it was either partially or entirely withdrawn and inserted in a fresh direction. There is considerable round-celled infiltration in the sub-conjunctival tissue and cornea adjacent to the cicatrices. It is difficult to say to what extent the iris tissue has been removed, as the infiltrated iris tissue cannot be differentiated from the inflammatory exudation. A large piece of what is probably detached iris is entangled in the inner cicatrix. There is a gap in the anterior capsule of the lens opposite the cicatrices, and considerable invasion of the lens substance by leucocytes. The lens fibres have, in places, large collections of hyaline globules amongst them.

There is an inflammatory membrane on the anterior surface of the lower part of the iris which passes to the anterior capsule of the lens. In some sections there is a gap in Descemet's membrane in the centre of the cornea into which an adhesion passes from the iris.

Case 23 (*Register No.* 3458).—*Chronic Glaucoma. Iridectomy. Tension normal for a year. Excision on account of Iritis and pain.*

Mrs. M. came under observation first in November, 1887. She then had chronic glaucoma in both eyes. She stated she had seen halos for many years. In the left the optic disc was pale and slightly cupped. Her field was much contracted. An iridectomy was performed on both eyes, a Gräfe's knife being used for the incisions.

In February, 1888, the vision of her left eye was found to have considerably improved since the operation, it was then with glasses $=\frac{6}{18}$ and J. 4. The cicatrix was cystoid, and the T. n.

On June 23rd, her left eye was noted to be quiet, T. n. Media hazy.

On October 15th, she came stating that she thought she had caught cold in her left eye while out driving. She had been using eserine for six weeks. There was then found to be total posterior synechiæ and no reflex. The T. was normal.

On November 3rd, the T. of her left was full.

It was excised on account of pain on January 21st, 1889.

Pathological Examination.—The eyeball had been in Müller's fluid for several months previous to my receiving it.

On section the anterior chamber is found to be shallow. At the upper margin of the cornea is a cystoid cicatrix. The lens appears to be normal. The vitreous is somewhat thin. The retina *in situ ;* the optic disc slightly cupped, not excavated. A portion of the iris is absent above, what is left of the pupillary border is adherent to the lens capsule.

Microscopical Appearances.—The iridectomy incision is situated ·6 mm. external to the termination of Bowman's membrane anteriorly, and passes through Descemet's membrane previous to its splitting up into the fibres of the ligamentum pectinatum.

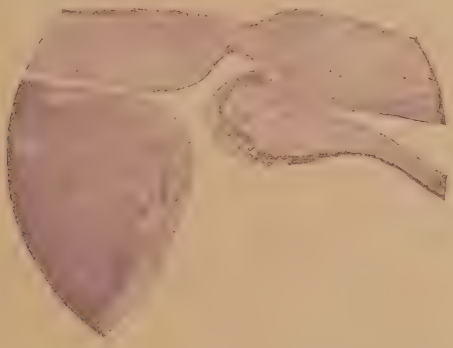

Fig. 14.—Section showing cystoid cicatrix in Case 23, lined partly by prolapsed ciliary body and partly by atrophied root of iris.

There is a wide gap in the sclero-corneal tissue in the situation of the incision, the conjunctival and episcleral tissue having healed over it. A portion of the root of the iris has been left at the iridectomy, and this, together with the anterior part of the ciliary body, turns round into the gap in the sclero-corneal tissue, and lines it for nearly its whole extent. The

tissue of the iris is here very much atrophied, and in places its uveal pigment layer is absent, probably being broken through as the result of stretching. The angle of the anterior chamber on the opposite side of the sections to the iridectomy is open.

The illustrations in this paper are reproductions of photo-micrographs taken by the author.

AN ANALYSIS OF ONE HUNDRED AND FIFTY-EIGHT CASES OF ACUTE PURULENT OPHTHALMIA.

By W. T. Holmes Spicer.

The records of all the cases of purulent ophthalmia taken into the wards at Moorfields from January, 1879, to December, 1890, together with those at St. Thomas's Hospital from December, 1880, to September, 1890, have been collected; the conclusions drawn from them are embodied in the following paper. Cases of ophthalmia neonatorum are not included, as they are not, as a rule, admitted into the wards, and it has been attempted, as far as possible, to exclude cases of simple catarrhal conjunctivitis, although no defined line can be drawn between these latter and the more severe ones. I am indebted to the staff of the Royal London Ophthalmic Hospital for permission to use their cases; those occurring at St. Thomas's I have obtained through the kindness of Mr. Nettleship, at whose suggestion the enquiry was undertaken.

There were 158 cases of purulent ophthalmia occurring in separate individuals, of whom 126 were males, and 32 were females,

In	57	cases both eyes were involved.
In	58	„ right only was „
In	37	„ left „ „
In	6	it was not stated.
	158	

or taking each eye as a separate case, there were in all 215 cases.

Cause.

There was a history of gonorrhœal infection, direct or indirect, in 111 males and 15 females; 75 males and 6 females were stated in the notes to have, or to have

recently had a gonorrhœal discharge; in other cases the notes have been headed gonorrhœal ophthalmia, but in all of them there had probably been contact with discharge from the genital organs, or from a previous case of purulent ophthalmia. In seven cases the disease was caught from nursing babies with ophthalmia neonatorum; in four cases from association with persons suffering from gonorrhœal discharge. There is also included a special class of female children, the subjects of non-venereal discharge from the genital organs, who had inoculated their own eyes.

The great preponderance of cases among males is partly due to the greater frequency of gonorrhœa among males, and partly to the manner in which the poison gains access to the eye. There is a greater probability on the part of males of the hands coming into contact with the genital organs either consciously or during sleep, and of consequent conveyance of the poison to the eye; the greater number of right eye cases also points somewhat in this direction, as the number of right-handed exceeds that of left-handed people.

Result.

Recovery complete—serious cases	76
„ „ —slight cases	8
Cornea slightly damaged	26
„ seriously „	74
Eye lost entirely	30
Discharged cured, but re-admitted 5 weeks after with perforated ulcer	1
	215

Complete recovery is taken to mean that the cornea has escaped entirely, and that no complications are left; slight damage indicates that the cornea has escaped perforation, but is left with a localised opacity away from the centre, the vision being little if at all impaired. Serious damage to the cornea includes those cases in which it has been perforated and a prolapse of the iris has occurred, or

in which a dense leucoma is left with great impairment of vision. Eye lost entirely means that the globe was either at the time or subsequently enucleated, or that its contents had escaped and it remained useless.

For calculating percentages, as the cases coming under some of the headings are few in number, it has been found better to group them under two headings.

Recovery complete, or with slight damage only 110 cases.
Serious damage, or total loss of eye .... 104 „

If the cornea is affected at all, it is likely to be seriously damaged; it most frequently escapes altogether, the next most probable result is that it will suffer severe damage.

Sex.

With the exception of the greater frequency of the disease in males, sex appears to make no difference, the cases, judged by results, run the same course in each, the percentage of corneal damage in males is 50·8, and in females 50.

Age.

There is a marked difference in the resisting power of the tissues to the destroying action of the poison in the different periods of life; early adult life is the period when the least amount of injury is inflicted on the cornea; in every case in which the age was over 38 the eye went to the bad with one exception (89), that of a woman aged 72 who caught the disease from a baby, came to the hospital within twenty-four hours, was taken in and put under active treatment at once. There was no loss of time, everything was favourable for recovery, yet the cornea became ulcerated. In all the other senile cases the eye was rapidly lost before admission.

	No.	Percentage of Recovery.	Percentage of Damage to Cornea.
Cases under 15....	18	44	55
„ from 15 to 20	36	63	36
„ from 20 to 25	54	50	50
„ from 25 to 30	40	40	60
„ from 30 to 40	24	41	58
„ over 40	7	14	85

Duration of the Gonorrhœa.

The activity of the poison diminishes with the duration of the discharge; this has long been known, and has a practical bearing in the choice of matter with which to inoculate eyes suffering from pannus. In every case in which the gonorrhœa had lasted upwards of four months the eye recovered completely from the ophthalmia; where the duration was over two months, 9 recovered and 3 suffered damage; where the duration was upwards of one month, 9 recovered and 6 suffered damage; of cases where the discharge had lasted under one month, 8 recovered and 15 suffered damage. That is to say, the longer the duration of the discharge before infection of the eyes, the less active the poison becomes, and the less serious in its effect on the cornea.

Similarly in every case in which the second eye followed the first after more than one week's interval, the attack in the second eye was attended by less harmful consequences than that in the first. This was, no doubt, in a measure due to their coming sooner under treatment, but not entirely so, as the attack in the second eye is noted to be slight in 10 cases, and in one case (45) in which treatment was not begun till the second eye had been bad fifteen days, there was a considerable difference in the result.

Duration of the Ophthalmia.

The duration of the ophthalmia before the application of efficient treatment is probably the most important factor of all in the history of each case. The disease is so rapid in its course, and so destructive to the cornea, that no time must be lost; a few days or hours may make all the difference between recovery with good vision on the one hand, and more or less absolute and permanent blindness with disfigurement on the other.

Where the recovery was complete, 70 eyes—

The duration of the ophthalmia was less than 1 week in 66 or 94 p.c.
" " " " more " " 4 or 6 p.c.

Where the cornea suffered slight damage, 22 eyes—

The duration of the ophthalmia was less than 1 week in 18 or 81 p.c.
" " " " more " " 4 or 19 p.c.

Where the cornea suffered serious damage, 55 eyes—

The duration of the ophthalmia was less than 1 week in 26 or 47 p.c.
" " " " more " " 29 or 53 p.c.

Where total loss of the eye ensued, 25 eyes—

The duration of the ophthalmia was less than 1 week in 7 or 28 p.c.
" " " " more " " 18 or 72 p.c.

Condition of the Eyes on Admission.

Most of the cases are stated to have great injection and chemosis of the conjunctiva; the worst of them, in addition, have œdema and discolouration of the lids. The discharge does not become completely purulent till the second day, or later; those admitted before that time are stated to have either slight, or thin discharge.

There is great difference in the condition of the cornea, which seems to be affected in two entirely different ways; in many cases there is noted to be slight general hazè, or loss of transparency, which may be recovered from entirely (21, 39, 47, 86, 96, 98, 144), or which may lead to perforation, or to a general necrosis with loss of the globe (13, 22, 28, 33, 38, 49, 100, 120, 156, 157). This infiltration may come on quite early in the disease, or later, as in one (28), where, after a week's treatment, the whole cornea suddenly became opaque. The other kind of corneal affection does not generally begin so early; it consists in a more limited ulceration, confined to one part of the cornea, and extending deeply. Probably the more general infiltration and subsequent necrosis of the cornea, depend upon an interference with its nutrition by the pressure of the inflammatory œdema around it, while the localised ulcer is due to infection from the prolonged contact of its surface with a violent poison.

The seat of ulceration of the cornea is always said to be most often at the exposed part, or below. Of the cases where the position of the lesion is stated in this list, it occurs twenty-one times in the upper part, fourteen times in the lower, five times centrally, and twice in many places simultaneously.

Treatment.

There is necessarily a similarity in the treatment of all the cases up to a certain point. The cornea must not be allowed to remain bathed in a highly poisonous discharge, frequent application of cleansing lotions must be made. Where the cornea was sound, as a rule the applications were iced, or ice-pads were kept constantly applied to the eye; where the integrity of the cornea was endangered, as shown by infiltration, or loss of perfect transparency, ice was not applied, but eserine drops used instead. Whatever was the nature of the cleansing lotion, simple iced water, boracic acid, chloride of zinc, carbolic acid, or weak perchloride of mercury, the result was not affected; each, in turn, had a certain amount of favour, as shown by the following list:—

Kinds of treatment used more or less in combination.

Nitrate of silver, mitigated stick	18 cases.
„ „ gr. xx to oz	66 „
„ „ gr. x	24 „
„ „ gr. v	2 „
Chloride of zinc	45 „
Ice	46 „
Boracic acid	47 „
Carbolic acid	28 „
Hydrarg.-perchlor.	23 „
Iodoform	26 „
Quinine lotion	8 „
Zinci sulph.	4 „
Alum	3 „
Poppy fomentation, Copper sulphate, Resorcin, Lapis divinus, Peroxyde of hydrogen, Absolute alcohol, Condy's fluid	1 case each.

Scarification of the conjunctiva	4 cases.	
Leeches	2 „	
Canthotomy	3 „	
Galvano cautery	2 cases	for corneal complications.
Belladonna fomentations	2 „	
Atropine	9 „	
Eserine	18 „	
Sæmisch's section	2 „	

There is no doubt about the great superiority of strong nitrate of silver, applied by the surgeon directly to the everted lids, over every other form of treatment; the percentage of recoveries depends more upon this factor than any other.

To compare the results it is necessary to start with similar factors; all those cases in which the cornea was sound on admission are grouped together with the result of the treatment.

Cornea sound on admission.

Complete recovery, 98 cases—

Strong argent. nit. was used in 80 or 81 p.c.
„ „ „ not „ 18 or 18 p.c.

Serious damage to, or total loss of eye—

Strong argent. nit. was used in 10 or 55 p.c.
„ „ „ not „ 8 or 44 p.c.

The stronger applications, the mitigated stick, or the 20 gr. sol., appear to be more successful than the 10 gr. sol.; but this does not come out very strongly.

A paper was published by Burnham in the tenth volume of these Reports, advocating the use of carbolic acid, 1 in 20, in gonorrhœal ophthalmia, and stating the good effect this treatment had had; his cases are included in this list. A form of treatment may have very good results in the hands of one man, from some particular care or method of application, but it must be shown to be equally successful and easy of application in other hands before its claim is substantiated. Tested in this way, carbolic acid is not found to be especially good; its effect is less lasting than that of nitrate of silver; it has to be applied more frequently to the everted lids, and this

means more pain, and possibility of damage to the cornea.

In a certain number of cases the sac was washed out daily with strong hydrarg. perchlor., gr. iv to the oz., but the number of cases is not enough to draw conclusions from. A stick of mitigated perchloride of mercury was used by the House-Surgeon at Moorfields for a time in cases of ophthalmia neonatorum, but was given up in favour of the strong silver.

The Use of Buller's Shield.

There can be no doubt that, if kept properly applied, the shield must be of great use in protecting the sound eye from infection, but without its use the second eye may escape for a long time; in many cases the discharge continued upwards of three weeks in one eye, without the other being inoculated; in (6), the right had been discharging five weeks without the left becoming infected. On the other hand, in many cases which had gone on safely for a time, the sound eye eventually became involved, as in one case (45), in which the second eye was infected after four weeks, the stress of the attack having passed over in the first eye.

It must not be taken for granted that, because the shield is there, the occluded eye is quite safe. Cases (1, 16, 28, 100, 117, 126) in which the second eye became infected, although the shield was being worn, show that the shield is not an absolute protection. No doubt the inoculation was due, in every case, to inefficient application, or to a loosening of the attachment of the shield, but if it cannot be kept properly applied at an ophthalmic hospital, it will, probably, be less efficiently done elsewhere. It is difficult to secure constant adhesion of the plaster, which gets moistened by the applications to the other eye, and its inner border detached. Attention should be constantly directed to this, the weakest point in the armour of defence.

Condition of the other Eye.

There was slight conjunctivitis in the other eye in eight cases before admission, differing entirely in course from the purulent cases, inasmuch as the discharge never became profuse, and the usual characters of swelling and great injection of the conjunctiva were absent (9, 30, 34, 38, 109, 122, 145, 148). A probable explanation of this is that the eyes were habitually red and irritable, and, in consequence, frequently rubbed by the fingers, and one of them inoculated in this way. In four cases (17, 117, 118, 137) after admission, slight conjunctivitis came on in the second eye. This may have been set up by the warmth and moisture caused by wearing the shield. It was remarked by Gunn* that there is frequently irritation and gumming accompanying the use of the shield, and that a history of weak eyes and gummy lashes can be found in these patients who inoculate themselves by the act of rubbing the eyes. An interesting outbreak of blenorrhœa, bearing on this point, is described by Brunhuber† as occurring in a hospital, but only attacking those eyes which had already been damaged by inflammation.

It is possible that some of these cases were congestions of the anterior parts of the eye of a rheumatic type, occasioned by the presence of the gonorrhœal poison in the tissues, and not due to infection. A quiet gonorrhœal conjunctivitis, not due to infection, has been noted by Despagnet and other writers.

Gonorrhœal Rheumatism.

In sixteen cases there were manifestations of gonorrhœal rheumatism, in four there was iritis as well; there does not seem to be a greater susceptibility of the tissues in these cases to the poison. Ten made a good recovery,

* R. L. O. H. Rep., vol. x, p. 80.

† Zehender's Monatsblätt., vol. xiv, Jan., Feb.

in three of the cases the ophthalmia was said to be slight only. In most of the cases the gonorrhœa had lasted some weeks, in one (43), however, it had only lasted four days before the onset of the rheumatism and ophthalmia; in another case (50) it had lasted six days, but it was the third attack.

Complications.

In five cases (21, 28, 34, 37, 145) the disease assumed membranous characters, and the duration of the treatment was protracted. Two of these cases (28, 34) appear to have been true diphtheritic ophthalmia, as in the first one (28) it was only the second eye, attacked 17 days after admission, while wearing Buller's shield, in which the inflammation became membranous; and in the other case (34) the discharge was not purulent, but scanty and flaky, and was accompanied by the constant presence of a membrane on the lids, and by solid swelling of the conjunctiva. The other cases were only pseudo-diphtheritic, in which the discharge remained coagulated on the lids in the form of a false membrane.

In nine cases (21, 30, 45, 64, 105, 110, 112, 115, 150) it is stated that the lids were granular, either during or after treatment. The granulations were either a simple papillary overgrowth or trachomatous. If the latter, it seems probable that the eyes were originally affected with a quiet trachoma, on which a purulent ophthalmia was grafted, the cases already mentioned in which quiet conjunctivitis had existed unnoticed for some time before purulent infection may be of this kind; but it is interesting to note that Von Arlt,* Fuchs,† and other continental observers believe that the excessive growth of the papillæ produced by a chronic purulent conjunctivitis, and the granulations of true trachoma, are varieties of one and the same disease.

* Die Krankheiten des Auges, 1854. Bd. I, p. 106.

† The Causes and Prevention of Blindness. London, 1885. P. 37.

Conclusions.

The most noteworthy results of this enquiry show the extreme danger of postponing treatment, in other words the great value of treatment; the increasing danger to the eye with increasing age; the weakening of the activity of the poison with the duration of the discharge; the care needed in the application of Buller's shield to the sound eye; and above all the very great superiority of strong nitrate of silver over all other forms of treatment.

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
1	M.	24	8.3.79	Moorfields I.P. 241	2 months	Mr. Tweedy	R. M. G.	—	Both
2	M.	16	9.10.79	Moorfields I.P. 1145	2 weeks	Mr. Streatfeild	R. M. G.	Gon. one month	R.
3	M.	20	23.8.79	Moorfields I.P. 961	17 days	Mr. Hulke	G. H. B.	—	R.
4	M.	30	12.11.79	Moorfields I.P. 1299	3 weeks	Mr. Hulke	R. M. G.	Gon.	R.
5	M.	18	7.7.79	Moorfields I.P. 768	2 weeks	Mr. Adams	R. M. G.	Gon. 4 weeks	L.
6	M.	30	24.3.79	Moorfields I.P. 323	4 weeks	Mr, Lawson	R. M. G.	—	R.
7	M.	19	26.5.79	Moorfields I.P. 574	17 days	Mr. Lawson	R. M. G.	Gon. 2 months	R.
8	M.	23	22.9.79	Moorfields I.P.	7 days	Mr. Lawson	R. M. G.	Gon. 4 weeks	Both
9	F.	21	23.6.80	Moorfields I.P. 845	29 days	Mr. Lawson	G. H. B.	—	Both
10	M.	26	12.5.80	Moorfields I.P. 683	11 days self discharged	Mr. Wordsworth	G. H. B.	Gon. still continuing	R.
11	M.	25	21.7.80	Moorfields I.P. 993	16 days	Mr. Wordsworth	G. H. B.	—	L.
12	M.	28	1.12.79	Moorfields I.P. 1370	36 days	Mr. Wordsworth	R. M. G.	Gon. 9 months ago followed by gleet	R.
13	M.	17	2.11.80	Moorfields I.P. 1589	21 days	Mr. Wordsworth	G. H. B.	—	Both

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
L. 24 hours.	L. swelling, discoloration of lids, chemosis, profuse thin discharge	Ice, zinci chlor. gr. ii, A. N. x. R. A. N. xx, canthotomy of L. for ectropion	Yes	L. perforation, prolapse of iris. R. cured	2nd eye infected while in hospl. by using the wrong towel. 17 days interval between the two eyes.
days	Chemosis, thick discharge. C. clear	Zinci chlor. gr. ii, eserine	—	Recovered. C. not affected.	
—	Chemosis, C. clear	Ice, zinci chlor. gr. ii, A. N. xx	Yes	Cured.	
2 days	Much injection, disch., large sloughing ulcer above	Eserine, poppy heads, A. N. mit. 3 a week	Yes	Ulcer healed, leaving dense leucoma.	
—	Much discharge and injection, cornea clear	Lotis aluminis A. N. x	—	Recovered perfectly.	
weeks	Pur. disch. cornea, large ulcer above	Zinci chlor. gr. ii, A. N. xx, eserine	Yes	Corneal leucoma.	
week	Consid. chemosis, creamy disch. C. clear, nystagmus	Zinci chlor. gr. ii, A. N. xx	—	Cured	L. lost from cold in infancy. Ophth. neonatorum.
t. 3 days, L. 2 days	Slight muco-purulent disch. and chemosis	Zinci chlor. gr. ii, mist. Pot. iod., iced water	—	R. and L. cured	Had gon. rheumatism same time.
. 3 days, R. 1 day	R. slight injection and discharge. L. much brawny swelling of lids, great chemosis overlapping the cornea. Copious purulent discharge, cornea clear	Carbolic acid 1–20 frequently. Iced cold water constantly. Argent Nit. gr. xx (3 applications only). Mist. quininæ	—	Good recovery in both	R. was never very bad.
—	Much injection, upper part of cornea necrosed, prolapse of iris. Rest of cornea clear	No record	—	Improved	Gonorrhœal rheumatism.
weeks	Much conjunctival swelling, cornea perforated in several places	Gutt. eserine (stopped after first day on account of pain) Lot. quininæ frequently. Cold bathing	—	Extensive prolapse of iris. p. l. good.	
days. Both eyes have been weak 18 months	Much discharge opacity of cornea (?) old	Argent Nit. gr. xx, twice daily zinci chlor. gr. ii, ter die	Yes	Good, sl. general haze of cornea.	
2 weeks, R. 1 week	R. much pur. disch., swelling of conjunctiva overlapping cornea, cornea clear: L. more swelling and discharge than in R. haze of C. lower part excavated bulged; iris bulged below	Acid carbol. 1–20 frequently by patient, 2 a day by H. S., 4 a day by nurse. Iced cold water constantly	—	R. cornea never affected. L. ulcer healed; ant. synechia. vessels on cornea.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
14	M.	19	11.12.80	Moorfields I.P. 1594	18 days	Mr. Wordsworth	G. H. B.	Long time. Disch. lessened before eye became affected, but present when admitted	L.
15	M.	20	4.6.80	Moorfields I.P. 755	10 days	Mr. Tweedy	G. H. B.	—	R.
16	M.	20	24.12.79	Moorfields I.P. 1452	12 days	Mr. Tweedy	R. M. G.	4 weeks, nearly well on admission	Both
17	M.	21	2.3.80	Moorfields I.P. 274	30 days	Mr. Couper	G. H. B.	5 weeks	Both
18	M.	24	7.7.80	Moorfields I.P. 922	29 days	Mr. Couper	G. H. B.	—	R.
19	M.	22	14.8.80	Moorfields I.P. 1085	28 days	Mr. Tay	G. A. B. and G. H. B.	—	L.
20	M.	24	25.8.80	Moorfields I.P. 1119	31 days	Mr. Hulke	G. A. B.	Disch. ceased 3 weeks before admission, when eye began	L.
21	M.	20	28.9.81	Moorfields I.P. 1131	3 months	Mr. Wordsworth	W. J. M.	Gon. began 2 months ago. Gleet still	Both
22	M.	36	2.6.81	Moorfields I.P. 668	33 days	Mr. Lyell	W. J. M.	—	L.
23	M.	23	17.12.81	Moorfields I.P. 1540	23 days	Mr. Lyell	W. J. M.	4 months. Only gleet recently	R.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
10 days	Much conjunctival swelling overlapping cornea. Cornea clear centre, hazy at periphery, deep excavation above	Acid carbol. 1–20, 6 daily to everted lids, and every half hour by patient. Iced water constantly	Yes	Ulcer healing, rest of cornea clear. Good a. c.	
4 days	Much chemosis overlapping cornea. C. clear	Quinine lotion. Gutt. eserine 6 in die. Argent Nit. gr. xx, 2 in die, brushed on lids	—	Cornea escaped.	
5 days	Chemosis and much discharge. C. clear	Gutt. zinci chlor. gr. ii, every 3 hours. Argent Nit. gr. v, daily	Yes	Good in both	Second eye followed 3 days after his admission to the hosp. Note says "Protection has not been efficiently applied."
7 days	Much swelling and discharge, excavation of cornea above and below, with infiltration	Cold compress constantly. Mitigated stick twice a day. Gutt. zinci chlor., Gutt. eserini gr. iv, 6 in die, later, fotus belladonnæ	—	Cornea yielded, a broad ant. synechia resulted. Cornea generally nebulous, P.L. R. recovered	Slight conjunctivitis in R. 26 days after admission.
1 week	Swelling and discharge. Prolapse of iris through ulcerated cornea above. Lower and outer part clear	Argent Nit. gr. xx bis die (2 days only) zinci chlor. gr. ii, 6 in die. Gutt. eserin. 6 in die	—	Large flattened prolapse above. Ant. synech. to middle of C. Fair a. c. down out. Many nebulæ.	
3 days	Lids swollen, brawny, chemosis overlapping cornea. Cornea clear	Iced bathing, carbolic acid 1 in 40 frequently by patient, acid carbol. 1 in 20, 6 daily. Mist. Quininæ	—	Good. Cornea entire; slight infiltration below.	
3 weeks	Lids swollen, cornea sloughed, eyeball shrivelled, profuse purulent discharge	Argent Nit. gr. x. Lot. aluminis	—	Eye lost.	
7 days	L. injection, swelling, discharge, cornea clear. R., cornea slighlly hazy	R. Lot. acid carbol., 1 in 20 every hour. L., A. N. xx., twice a day. Lot. acid carb. for bathing. Later, resorcin, 1 per cent.	—	Both cornea clear. R. $\frac{20}{70}$, L. $\frac{20}{40}$	Cure protracted by conjunctival granulations, and presence of a membrane on R. upper lid.
4 days	Chemosis, purulent discharge, cornea steamy	Lot. acid. carb. 1–20, every hour. Ung. iodoformi, gr. x.	—	Cornea perforated.	
days	Great swelling and discharge, cornea clear	Hydrarg. perch. gr. iv, sac to be thoroughly washed twice a day. Hydrarg. perchl. gr. i, pads constantly applied. Ung. iodoformi, gr. xv	Yes	Good. Cornea clear.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye
24	M.	26	8.10.81	Moorfields I.P. 1167	—	Mr. Wordsworth	W. J. M.	—	Both
25	M.	19	23.9.81	Moorfields I.P. 1103	31 days	Mr. Tweedy	W. J. M	Disch. still present	Both
26	M.	16	26.9.81	Moorfields I.P. 1130	28 days	Mr. Tweedy	W. J. M.	—	Both
27	M.	19	30.9.81	Moorfields I.P. 1134	3 months	Mr. Tweedy	W. J. M.	Three weeks	Both
28	M.	29	7.10.81	Moorfields I.P. 1176	2 months	Mr. Tweedy	W. J. M.	Three weeks	Both
29	M.	19	15.10.81	Moorfields I.P. 1388	6 weeks	Mr. Lawson	W. J. M.	—	R.
30	M.	19	4.2.81	Moorfields I.P. 154	18 days	Mr. Couper	G. H. B.	—	Both
31	M.	19	23.8.81	Moorfields I.P. 1086	20 days	Mr. Couper	W. A. F.	Disch. still present	L.
32	M.	23	14.2.81	Moorfields I.P. 192	22 days	Mr. Adams	G. H. B.	1 month	R.
33	M.	45	15.8.81	Moorfields I.P. 1057	40 days	Mr. Adams	W. A. F.	—	R.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
12 months, treated in Chicago Hospital	R. purulent disch., rather scanty staphyloma of cornea, which is leucomatous. L., discharge, dense central leucoma, p.l.	Lot. boracis. Gutt. atropin	—	R. and L., no improvement	Long duration of discharge.
R 1 week. L. no note	No note	Carbolic acid, 1 in 20. A. N. xx, bis die. Gutt. eserini	—	R. cornea clear. L. small ulcer below	Had gonorrhœal rheumatism.
3 days	Lids swollen, purulent disch. R. cornea clear. L. cornea ulcerated, more chemosis than R.	Lot. acid carb., 1 in 20 every hour. R., Ung. iodoformi, bis die. L. A. N. xx, bis die	—	R. cornea clear. L. supl. ulcer.	
6 days	R. great chemosis and disch., C. clear. L. same, less severe	Lot. acid carb., 1 in 20. Iced water. A. N. xx. After cornea perforated, atropin belladonna fomentations. Pot. Iod., gr. v, pot. bicarb. gr. xv inf. calumb., ter die	—	R. cornea leucomatous, post synechiæ. L. post synechiæ, lymph in pup. R. counts fingers. L, $\frac{20}{200}$	Urethral discharge persisted during whole time of stay. There was iritis, and treatment pointing to rheumatism.
R. 14 days	Profuse discharge, cornea clear. After a week, R. cornea suddenly became opaque. L. followed with membranous conjtis. after 17 days	Lot. acid carb., 1 in 20 frequently. A. N. xx, bis die. After membrane appeared on L., lot. quinine.	Yes	R. dense corneal leucoma, hand movements. L. central nebula	R. gonorrhœal. L. membranous appearing while Buller's shield was being worn. 2nd eye attacked 17 days after admission.
—	—	Quinine lot. A. N. xx, once a day. Ulcers formed on C.	—	Small nebulæ, left, rest of C. clear.	
L. 2 weeks R. always stuck together	R. slight conjunctivitis, small ulcer up and out. L. much swelling of conjunctiva. C. necrosed, a large prolapse of iris	Lot. acid carbol., 1 in 20 every hour. Iced water constantly. Readmitted, and L. exicsed after 2 months. R. granular lids. A. N. mit. for 5 months	—	R. C. recovered, but lids left granular for at least 7 months, and slight nebulæ on C. L. excised	Lids left granular for 7 mos. at least, probably purulent infection of a case of granular lids.
3 days	Chemosis, mod. swelling, purulent disch., cornea clear	Acid carbol., 1 in 20. A. N. gr. x	Yes	C. perforated. Excised later.	
10 days	Much conjunctival swelling and discharge, deep excavation of C. above, shelving and becoming shallow below	Acid carbol., 1 in 20 every hour, and 4 times to everted lids. Iced water constantly. Gutt. eserinæ. Excavation when healing, touched with A. N. mit	—	Ulcer healed. No perforation.	
4 days	Chemosis, purulent discharge, cornea steamy	Acid carbol., 1 in 20. A. N. x, ter die. Ung. iodoformi. Eserine	—	Cornea perforated.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
34	F.	11	30.12.80	Moorfields I.P. 1652	37 days	Mr. Adams	G. H. B.	Patient had no gon. herself. Father had it, and two daughters caught ophthalmia at the time	R.
35	M.	23	10.5.82	Moorfields I.P. 678	12 days	Mr. Lyell	W. J. M.	Has had gon., but disch. ceased	R.
36	M.	26	8.4.82	Moorfields I.P. 528	28 days	Mr. Tay	W. J. M.	Disch. present now	R.
37	M.	25	25.9.82	Moorfields I.P. 1356	42 days	Mr. Tay	W. J. M.	14 days	L.
38	M.	20	7.3.81	Moorfields I.P. 268	18 days	Mr. Streatfeild	G. H. B.	—	L. R. slght
39	M.	26	23.10.82	Moorfields I.P. 1512	26 days	Mr. Lawson	M. J. S.	3 months, gleet persisting	Both
40	M.	20	2.1.82	Moorfields I.P. 2	22 days	Mr. Adams	W. J. M.	2 months, still profuse discharge	L.
41	M.	21	2.1.82	Moorfields I.P. 3	46 days	Mr. Streatfeild	W. J. M.	Gleet only present on admission	R.
42	M.	21	12.6.82	Moorfields I.P. 898	16 days	Mr. Streatfeild	W. J. M.	Gon. several months ago. Fresh attack 1 week ago.	Both
43	M.	25	5.8.82	Moorfields I.P. 1186	9 days	Mr. Streatfeild	W. J. M.	1 week	Both
44	M.	19	1.10.83	Moorfields I.P. 1497	11 days	Mr. Tay	M. J. S.	—	L.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
3 days	R. brawny swelling of lids and chemosis, hiding all but central part of C. Cornea clear where seen. Membrane covering upper lid. Much purulent discharge. L. slight gumming	Acid carb., 1 in 20, 5 in die to everted lids. Iced water constantly. Later, membrane came on lower lid, then lot. quin. sulph. gr. iv, Disch. did not remain purulent, became watery with flakes in it within a few hours of admission	Yes	Ulcer of C. present, but C. did not become perforated. L. recovered.	
24 days	Profuse discharge. C. necrosed	Lot. hyd. perchlor. Powdered iodoform	Yes	C. sloughed.	
4 days	Purulent discharge. C. steamy below	Lot. acid carbol., 1 in 20. Sæpe. ung. iodof. Gutt. eserini. Afterwards, lot. hyd. perchlor., when C. had necrosed	Yes	C. completely necrosed. Lens escaped. Globe shrunk.	
—	Slight gon. ophth. C. clear	Lot. hyd. perchlor., gr. i. Powdered iodoform, bis die. Ice pads. Ulcer formed below, which spread. Some membrane on both lids. A. N. later	Yes	Corneal ulcer healed.	
L. 3 days	R. slight conjunctivitis. L. much swelling of conjunctiva, purulent discharge. Cornea infiltrated throughout	Lot. acid carbol. 1 in 20 every hour. Iced pads	—	R. cured. L. cornea necrosed. Prolapse of iris.	
R. 1 week. L. 2 days	Both. Chemosis disch. Cornea central haze	Argent nit. gr. x, bis die. Lot. quin. Ice pads	—	R. and L. corneæ clear.	
10 days	Great chemosis almost hiding C. C. sloughed, profuse discharge	Lot. hyd. perch. gr. ½, bis die. Ung. iodoformi bis die. Ice pads	—	C. densely opaque, slight staphyloma.	
4 days	Chemosis. Cornea invisible. On pushing back the chemosis. C. seen to be sloughed	Lot. hyd. bichlor. gr. ½, Ung. iodoformi	—	C. leucomatous	Tonsilitis.
L. 2 days. R. few hours	Swelling and disch. from both. L. cornea steamy	Lot. hyd. perchl. gr. ii, Iodoform. in powder, ter die. Ice pads	—	R. C. clear. L. slight haze of C.	
R. and L. 4 days	Disch. and ecchymosis, slight	Lot. acid. bor. Iced compresses. Pot. iod. and bicarb.	—	Both. Complete cure	Gon. 1 week. Rheum. and ophthalmia within 3 days.
5 days	Purulent disch. C. infiltrated	A. N. xx, bis die. Lot. acid bor. every hour. Ice pads	Yes	Whole C. softened, perforated below. Eye excised.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
45	M.	25	11.9.83	Moorfields I.P. 1539	2 months	Mr. Tay	M. J. S.	2 months	Both
46	M.	23	5.7.83	Moorfields I.P. 1136	17 days	Mr. Adams	M. J. S.	9 weeks	Both
47	M.	21	17.9.83	Moorfields I.P. 1417	15 days	Mr. Adams	M. J. S.	Gon. present on admission	L.
48	M.	31	26.11.83	Moorfields I.P. 1844	35 days	Mr. Adams	M. J. S.	—	R.
49	M.	19	15.11.83	Moorfields I.P. 1792	30 days	Mr. Streatfeild	M. J. S.	Gon. 14 days	L.
50	M.	37	19.8.84	Moorfields I.P. 1860	3 months	Mr. Lawson	E. H.	Gon. 7 days before 3rd attack	Both
51	M.	30	21.2.83	Moorfields I.P. 312	35 days	Mr. Nettleship	M. J. S.	Gon. 3 weeks	R.
52	F.	24	11.8.83	Moorfields I.P. 1333	42 days	Mr. Nettleship	W. O. M.	Vaginitis 14 days before adm.	Both
53	F.	15	14.9 83	Moorfields I.P. 1405	26 days	Mr. Nettleship	M. J. S.	—	Both
54	M.	32	18.3.84	Moorfields I.P. 438	9 days	Mr. Couper	J. B. L.	Gon. 2 months	R.
55	F.	30	26.8.84	Moorfields I.P. 1271	9 days	Mr. Couper	E. H.	Vaginitis	R.
56	M.	32	26.3.84	Moorfields I.P. 470	3 months	Mr. Hulke	J. B. L.	—	Both
57	M.	18	28.8.84	Moorfields I.P. 1828	7 days	Mr. Hulke	E. H.	—	L.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
R. 6 weeks. L. 15 days	R. perforated lost. L. purulent disch., lids granular, C. clear	R. excised. L. A. N. xx. Pulv. iodoformi 6 in die. Lot. A. B. sæpe., later A. N. mitd. stick	—	R excised. L. corneal opacity in centre and below, clearing.	
7 weeks	Ophthalmia catarrhal, iritis, and post synech.	Ice constantly. Ung. atropin, gr. viii. Hyd. c. Cret. gr. i, t.d.	—	R. and L. improved. Recovered from ophthalmia	Rheumatism gon.; iritis gon.; Catarrh. ophthalmia.
4 days	Chemosis, purulent discharge. Cornea hazy	Ice compress. A. N. mit. stick daily. A. N. gr. xx, daily. Pulv. acid bor. daily	—	Lower part of C. became infiltrated, but cleared.	
—	Chemosis, swelling of lids. C. upper part hazy	A. N. xx, daily. Pulv. iodoformi. Lot. boracic sæpe. Ice	Yes	Prolapse of iris at upper part of C.	
3 days	Swelling and discharge. Cornea generally opaque and yielding	Ice constantly. A. N. xx daily. Iodoform	Yes	Cornea clearing.	
R. 2 days. L. 1 day	Much chemosis and injection. Corneæ clear	A. N. xx. Lot. acid bor. Sodii salicyl. gr. xv, for rheumatism	—	R. and L. C. clear	Had gon. rheumatism, temp. 103°. Effusion into knee, ankle, and other joints.
4 days	Swollen, dull red patch of conjunctiva in upper lid. C. no ulceration, loss of brilliance only	A. N. mit. daily. Lot. quininæ. Cornea ulcerated above and became generally opaque. Conjunctiva scarified, and overhanging folds snipped off	—	C. opaque.	
L. 6 days. R. few hours	R. severe conjunctivitis chemosis. C. clear. L. chemosis, purulent discharge. C. upper half, deeply ulcerated; lower, hazy	C. gave way, iris prolapsed. Prolapse freely excised. Ice continuously Lot. acid bor. A. N. mit. to lid daily	—	R. C. clear. L. C. opaque.	
L. 14 days. R. 4 days	L. large perforated ulcer. R. slight chemosis C. clear	Lot. acid. bor. every half hour. A. N. mit. daily. L. excised; contents had escaped through perforated ulcer	—	R. clearing well. L. excised after contents had escaped through perforated ulcer	
1 week	Thickening and redness of conjunctiva, small spots of infiltration of C.	A. N. xx. Ice compresses. Lot. boracis freely	Yes	C. clear.	
11 days	Much discharge. No ulceration, little chemosis	A. N. xx. Lot. acid bor. Iced compress	—	C. clear.	
5 days	R. slight chemosis. C. entire. L. chemosis, swelling of lid. C. entire	Zinci sulph., gr. iv sæpe. A N. mit. daily and A. N. xx, chemosis snipped several times	—	R. perforation up and out. L. opaque all over.	
—	Much swelling, chemosis	A. N. x. Lot. acid bor.	—	C. clear.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
58	M.	30	7.8.84	Moorfields I.P. 1186	11 days	Mr. Adams	E. H.	Gon. ceased 4 days ago	R.
59	M.	20	26.8.84	Moorfields I.P. 1264	18 days	Mr. Adams	E. H.	—	Both
60	M.	26	22.9.84	Moorfields I.P. 1406	22 days	Mr. Adams	E. T. C.	Gon. 1 month, still discharge	Both
61	M.	23	13.11.84	Moorfields I.P. 1737	19 days	Mr. Lang	E. H.	10 days	R.
62	F.	20	20.3.83	Moorfields I.P. 517	24 days	Mr. Lawson	M. J. S.	Gon. 1 month	L.
63	M.	20	20.10.83	Moorfields I.P. 1600	1 month	Mr. Lawson	M. J. S.	Gon. 4 months ago lasting a month. After a month disch. returned slightly and still lasts	R.
64	M.	25	1.4.84	Moorfields I.P. 521	28 days	Mr. Tweedy	J. B. L.	Has had gon., no disch. now	L.
65	M.	—	2.8.84	Moorfields I.P. 1168	16 days	Mr. Nettleship	E. H.	—	R.
66	F.	18	26.8.84	Moorfields I.P. 1816	1 month	Mr. Nettleship	E. H.	—	—
67	M.	22	26.4.84	Moorfields I.P. 2018	2½ months	Mr. Nettleship	J. B. L.	Gon. 14 days	Both
68	M.	16	23.2.84	Moorfields I.P. 298	6 weeks	Mr. Streatfeild	J. B. L.	3 weeks	Both
69	M.	35	3.3.84	Moorfields I.P. 344	1 month	Mr. Streatfeild	J. B. L.	—	R.
70	M.	29	8.7.84	Moorfields I.P. 1030	3 weeks	Mr. Streatfeild	J. B. L.	Caught from baby with oph. neon.	R.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
2 weeks	Redness, chemosis, purulent disch. C. clear	Lot. acid bor. Cornea ulcerated, eserine	—	Small cicatrix in C.	
2 days	Congestion, chemosis, discharge. C. clear	A. N. x, bis die. Lot. acid bor., 4 in die. Later, lot. acid bor.	—	R. and L. Recovery complete.	
Began 8 days ago	R chemosis, discharge, perforating ulcer of C. L. chemosis. Haze in centre of C.	Ice compresses. Lot. zinci chlor. A. N. x	—	R. small nebula above. L. slight prolapse of iris.	
7 days	Much œdema and swelling of lids. C. n.	Ice compresses. A. N. x daily. Boric fomentations	—	C. normal	
8 days	Chemosis, discharge, lids granular. Cornea opaque, infiltrated vascular	Acid carbol (1 in 20), 2nd horis. A. N. mit. stick. Lot. hyd. perch, gr. i, daily	Yes	C. patches of opacity vascular, but clearing. V. 19 J. on discharge.	
5 days	Severe congestn., purulent discharge. C. clear	Ice. Lot. acid bor., 2nd horis. A. N. xx. C. sloughed	Yes	Cornea opaque.	
3 weeks	Chemosis, discharge. Opaque yellow, down and out	A. N. xx to L. daily. Lot. acid bor.	Yes	C. perforated.	
14 days	Swelling, discharge. C. opaque, ulcerated, prolapse of iris	A. N. xx	Yes	Excised.	
—	Chemosis. C. infiltrated	Boric fomentns. Saemisch's section, A. N. x	—	Ulcer healing, opacity left.	
(?) 1 week	R. muco-pur. disch. L. swelling, chemosis, pain, &c. C. n.	Ice. Acid bor. constantly. A. N. x daily Later Atrop. Iridect. for iritis, pot. iod and bicarb.	—	R. C. perforated. L. C. sound	After 3 weeks in H. recurrence of gon disch. from urethra; effusion into R. knee joint and other joints. Iritis, for which iridect. was done.
3 days	Both swelling, chemosis, disch. C. clear	Ice. A. N. xx. Pulv. iodof. daily. C. became ulcerated	—	R. and L. C. clear	Gon. rheum.
1 week	Chemosis overlapping C. C. perforated	L. acid bor. A. N. xx iodof. daily	Yes	Perforated C., prolapse.	
10 days	Swelling, chemosis. Ulcer above	Lot. acid bor. Ice. A. N. xx. Pulv. iodof. Excision after prolapse of lens and vitreous through perforation	Yes	Excised.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
71	M.	26	19.8.84	Moorfields I.P 1193	1 month	Mr. Streatfeild	E. H.	—	L.
72	M.	29	30.12.85	Moorfields I.P. 2113	4 weeks	Mr. Hulke	E. T. C.	3 weeks	L.
73	M.	39	8.1.85	Moorfields I.P. 43	6 weeks	Mr. Tay	E. H.	2 days (?)	L.
74	M.	22	5.10.85	Moorfields I.P. 1657	10 days	Mr. Tay	E. H.	1 month	Both
75	M.	21	22.12.85	Moorfields I.P. 2088	6 weeks	Mr. Tay	E. T. C.	—	Both
76	M.	23	3.7.85	Moorfields I.P. 1195	3 weeks	Mr. Streatfeild	E. H.	4 months	R.
77	M.	18	14.3.85	Moorfields I.P. 453	11 days	Mr. Tweedy	E. H.	2 months	L.
78	M.	23	28.7.85	Moorfields I.P. 1326	4 weeks	Mr. Tweedy	E. H.	4 days	L.
79	M.	27	15.1.85	Moorfields I.P. 222	15 days	Mr. Lang	E. H.	Venereal dis. 4 months, came on as sore, primary syph.	R.
80	M.	16	2.3.85	Moorfields I.P. 377	3 weeks	Mr. Lang	E. H.	—	Both
81	M.	17	13.7.85	Moorfields I.P. 1232	5 weeks	Mr. Lang	E. H.	—	Both
82	M.	20	20.7.85	Moorfields I.P. 1283	7 days	Mr. Lang	E. H.	Gon. 1 month	R.
83	M.	21	29.10.85	Moorfields I.P. 1818	3 months	Mr. Lang	E. H.	Gon. 6 weeks	Both

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
10 days	Thickening of lids. Cornea infiltrated and perforated. Iris prolapsed	A. N. xx. Ice. Lot. acid bor., prolapse snipped off	Yes	Leucoma, upper part of C. J. 20.	
4 days	Chemosis discharge. C. clear	A. N. xx. Lot. zinci chlor., every hour through hollow speculum	Yes	C. ulcerated, staphylomatous.	
5 days	Much chemosis, profuse disch. C. steamy	Lot. quin., gr. iv, 3is horis. A. N. xx, bis die	—	C. perforated, large leucoma	
3 weeks	Both purulent disch. R. small ulcer	Zinci chlor. gr. i, Atrop. sulph. gr. iv, 4tis horis	—	R. and L. cured	Attack mild, nearly over on adm.
L. 4 days, R. 1 day	Swelling, disch. C. clear	A. N. xx, bis die. Irrigated ½ hour bis die with hyd. perchl. 1 in 5000 through hollow speculum	—	R. and L. perforated	Gon. rheum.
10 days	Injectn., flaky discharge C. ulcerd.	Irrigated ½ hour with lot. zinci chlor. 13.7.85. A. N. x. Discharged cured, re-admitted 9 days after, globe ruptured, vitreous presenting (injury)	Yes	Cured: corneal opacity.	
9 days	Swelling, congestn., discharge. C. clear	Irrigated with zinci chlor. gr. ii hourly, and with douche speculum once daily. A. N. xx once daily	—	C. clear.	
2 days	Lids swollen, injectn., discharge. C. clear	Irrigated with zinci chlor. gr. ii, bis die. Cornea became infiltrated	Yes	C. opaque.	
4 weeks	R. globe collapsed. C. necrosed	Gutt. zinci chlor. Lapis divinus	Yes	Eye collapsed on admn.	
R. 4 days, L. 1 month	Much injectn. and chemosis, purulent discharge in both. R. C. clear. L. C. ulcerated	A. N. xx once daily. Zinci chlor. gr. i every hour	—	R. clear. L. leucoma.	
2 days	Congestion, swelling, discharge. C. clear	Irrigation for ½ an hour with zinci chlor. gr. ii, ter in die. Ice compresses. Bad attack came on in R. E. A. N. x after 10 days	Yes	L. C. all opaque, R. clear.	
3 days	Swelling, disch., &c. C. clear	Lot. zinci chlor. gr. ii, irrigated every half-hour. Ice compresses	Yes	Discharged cured, but re-admitted after 5 weeks with prolapsed iris through ulcer. Excised.	
4 days	Injection. No chemosis	A. N. x, ter die. Zinci chlor. gr. ii, 2nd hor. Quinine lot.	—	Both C. infiltrated. R. ant. synech.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
84	M.	21	9.5.85	Moorfields I.P. 793	10 days	Mr. Lawson	E. H.	—	—
85	M.	21	11.5.85	Moorfields I.P. 811	8 days	Mr. Lawson	E. H.	Gon. 14 days	—
86	M.	19	21.1.85	Moorfields I.P. 126	14 days	Mr. Gunn	E. H.	Sleeping with friend who had gon.	R.
87	F.	68	30.11.86	Moorfields I.P. 1883	10 days	Mr. Couper	E. T. C.	Caught from child with ophth. neon.	L.
88	M.	17	19.6.86	Moorfields I.P. 988	16 days	Mr. Hulke	E. T. C.	Gon. 5 weeks	R.
89	F.	72	12.10.86	Moorfields I.P. 1564	18 days	Mr. Hulke	E. T. C.	Caught from a baby with opth. neon.	R.
90	M.	25	26.5.86	Moorfields I.P. 782	1 month	Mr. Tweedy	E. T. C.	Gon. still present as gleet	L
91	M.	22	9.7.86	Moorfields I.P. 1103	4 weeks	Mr. Tweedy	E. T. C.	—	R.
92	M.	19	28.6.86	Moorfields I.P. 1036	3 weeks	Mr. Tay	E. T. C.	—	Both
93	M.	24	4.12.86	Moorfields I.P. 1915	3 weeks	Mr. Tay	E. T. C.	Gon. 14 days	R.
94	M.	20	29.6.86	Moorfields I.P 1035	2 weeks	Mr. Lawson	E. T. C.	6 months, still present	L.
95	M.	22	22.10.86	Moorfields I.P. 1636	1 week	Mr. Lawson	E. T. C.	Gon. disch. present	R.
96	M.	21	9.11.86	Moorfields I.P. 1753	2 weeks	Mr. Lawson	E. T. C.	Gon. present	Both
97	M.	23	22.8.86	Moorfields I.P. 1410	2 weeks	Mr. Lang	E. T. C.	Messmate had gon.	—

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
days	Swelling, chemosis, discharge. C. n.	Ice. Zinci chlor. gr. ii, 2nd hor.	—	Cured.	
week	Swelling, chemosis. C. clear	Zinci chlor. gr. ii, 2nd hor.	—	Cured	Had gon. rheumatism.
2 days	Much swelling, profuse pur. discharge, central opacity right cornea	Zinci chlor. gr. ii, six daily. Iced boracic compress. Argent. Nit. gr. ii, once daily	—	Cured. C. clear	Left eye excised 4 years before, reason not stated.
6 days	Chemosis, pur. discharge, cornea perforated, iris prolapsed	Lotio. alumn. 2nd hor.	Yes	Excised.	
3 days	Much congest., pur. disch. C. hazy	Zinci chlor. gr. ii, 2nd hor. Arg. Nit. xx daily, ulcer formed upper part, eserine treatment	Yes	Ulcer healed, cured	Eye had been watering 14 days before acute ophth. began.
1 day	Much inject, pur. disch. C. clear	Acid bor. lot. 2nd hor., Arg. Nit. gr. xx. Ice pad	Yes	Cornea ulcerated.	
5 days	Chemosis, pur. disch. C. clear	Zinci chlor. gr. i, A. N. gr. xx, ulcer formed	Yes	Ulcer cicatrized.	
—	Much swelling, pur. disch. C. hazy	Zinci chlor. gr. i. A. N. gr. xx. C. perforated, eserine treatment	—	A. C. re-formed, ulcer cicatrizing.	
R. 3 days. L. 1 day	Intense inflm., swelling and discoloration of lids, purulent disch. C. clear	Zinci chlor. gr. ii, hollow speculum bis die, and washed frequently. Mist. alb.	—	R. and L. recovery.	
1 week	Swelling injectn. disch. perford. ulcer and staphyloma	Zinci chlor. gr. i, every four hours	Yes	Excision advised	Eye lost on admission.
5 days	Intense swelling and injectn. Much purulent disch. C. clear	Zinci chlor. gr. i, hollow speculum, bis die. Bathed everyhalf-hour. A. N. xx occasionally	Yes	Cured.	
5 days	Lids swollen. Intense inject. of conjunctiva, purulent disch. C. clear	Ice pad. Through hollow speculum. Lot. acid bor., A. N. xx to lids	Yes	Cured.	
. 2 days. L. a few hours	Swelling, redness of conjunctiva, copious purulent disch. R. C. bright, L. not brilliant	Iced lot. acid bor. through hollow spec. three times a day. Bathed every ½ hour. A. N. xx once a day. Iced pads. R. C. became sl. ulcerated	—	R. and L. cured.	
2 weeks	Panophthalmitis, cornea gone	Excision	—	Excised	Eye lost on admission.

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
98	M.	19	15.6.87	Moorfields I.P. 1270	10 days	Mr. Couper	E. T. C.	Gon.	Both
99	M.	30	4.6.87	Moorfields I.P. 1268	6 weeks	Mr. Silcock	E. T. C.	Gon. 3 weeks, still present	L.
100	M.	32	31.10.87	Moorfields I.P. 1812	6 weeks	Mr. Silcock	E. T. C.	—	Both
101	M.	17	14.11.87	Moorfields I.P. 1897	14 days	Mr. Tay	E. T. C.	Gon. still present	R.
102	M.	20	31.8.88	Moorfields I.P. 1390	5 weeks	Mr. Lawson	C. H. W.	Gon.	R.
103	M.	18	14.2.88	Moorfields I.P. 267	11 days	Mr. Couper	E. T. C.	Gon. 1 month ago	L.
104	M.	26	16.4.88	Moorfields I.P. 596	9 days	Mr. Tay	C. H. W.	Gon. 14 days ago, opth. 3 days after	L
105	M.	24	2.8.89	Moorfields I.P. 1450	5 weeks	Mr. Couper	C. H. W.	Gon. 3 weeks	Both
106	M.	25	27.6.89	Moorfields I.P. 1182	2 weeks	Mr. Silcock	C. H. W.	Gon. present	R.
107	M.	21	5.8.90	Moorfields I.P. 1213	3 weeks	Mr. Couper	D. G.	Gon. 10 days	R.
108	M.	27	2.8.90	Moorfields I.P. 1206	1 month	Mr. Nettleship	D. G.	Gon. 3 weeks	Both
109	M.	28	21.12.80	St. Thomas's Ward notes, p. 347	1 month	Mr. Nettleship		Gon. 1 month, still present	Both

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
?	Swelling, injectn., and discharge of pus from both. R. C. clear, L. hazy	Iced lot. hyd. perch. Iced pads, syringing through hollow speculum. A. N. xx, to lids	—	R. and L. cured.	
3 days.	Lids swollen, chemosis, purulent disch. C. clear	Lot. acid. bor. through hollow specm., A. N. xx to lids. Iced pad. frequent bathing. Ulcer formed, which healed	Yes	Cured.	
—	L. swelling, purulent disch., cornea yellow, infiltrated	Iced lot. hyd. perch. 2nd hor. Iced pads, A. N. xx once a day. Scarification	Yes	R. recovered. L. excised	Inoculated in spite of shield, 2 days after admission.
4 days	Swelling, purulent disch. C. clear	Scarification. Zinci chlor. gr. ii, hollow specm. 4tis hor. A. N. xx once a day. Ice pads	—	Recovery.	
—	C. perfd., but not all sloughed, large prolapse	Lot. hyd. perch., zinci chlor.	Yes	Hardly any C. left	Had gon. rheum. of wrist as well.
3 days	Swelling, disch. and discolouration. C. clear	Lot. zinci chlor. gr. ii, A. N. xx. Ice pads	Yes	Cured.	
11 days	Purulent disch., swelling. C. clear	Zinci chlor. gr. ii, 4 in die. A. N. xx	Yes	Cured.	
—	Both much purulent discharge. R. C. sloughing. L. C. steamy	Lot. hyd. perch. Zinci chlor. A. N. stick. Copper sulph. solid lids became very granular and villous, and resisted treatment	—	R. and L. C. clearing, but very slowly on discharge.	
—	Purulent disch. C. clear	A. N. xx daily. Lot. ac. bor. Small ulcer formed	Yes	Cured.	
4 days	Œdema of lids, chemosis, much purulent discharge. C. fairly clear	Lot. hyd. perch. every hour. Ung. acid bor. A. N. x after 3 days. C. perforated, eye shrunk	Yes	Lost.	
R. 12 days. L. 9 or 10 days	Profuse discharge, not much swelling nor chemosis. Both C. perforated; R. more	Zinci chlor. gr. ii. A. N. xx, ter die. Sod. salicyl. for Arthritis. Re-admitted for iridect. for Leucoma, and improved from Fingers at 4′ to $\frac{9}{36}$	—	R. excised. L. perforated. Iridect. after with fair result	Gon. arthritis.
R. 7 days, L. some hours	R. Mod. dusky, soft swelling lid, thin, abundant discharge. C. clear. L. Slight discharge only	Lot acid carbol., 1 in 20 every half hour. Later, atropine to ulcer	—	Cornea perforated. Iris prolapsed inner part. After 2 years, R. excised for pain and symp. irritn. L. recovered.	Gonorrhœal rheumatism 2 days after admission.

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye
110	M.	59	13.7.81	St. Thomas's Ward notes, p. 128	2 months	Mr. Nettleship	—	Urethral discharge, but no infection. Had gon. many years ago	Both
111	M.	20	23.8.82	St. Thomas's p. 324	11 days	Mr. Nettleship	—	Urethral disch. 6 weeks	L.
112	M.	38	8.11.82	St. Thomas's p. 383	18 days	Mr. Nettleship	—	Urethral discharge present	Both
113	M.	22	15.11.82	St. Thomas's p. 391	3 weeks	Mr. Nettleship	—	Gonorrhœa 8 weeks, now only slight	Both
114	M.	37	26 1.84	St Thomas's p. 18	3 weeks	Mr. Nettleship	—	Gonorrhœa	L.
115	M.	17	11.2.84	St. Thomas's p. 29	1 month	Mr. Nettleship	—	Gon. some days	L.
116	M.	20	8.9.84	St. Thomas's p. 201	3 weeks	Mr. Nettleship	—	Gonorrhœa 2 weeks	L.
117	M.	22	7.9.85	St. Thomas's p. 229	5 weeks	Mr. Nettleship	—	Gonorrhœa 14 days	Both
118	M.	33	20.7.87	St. Thomas's p. 86	3 weeks	Mr. Nettleship	—	No gon. since 1875, when he had it. Had washed his face in same pail as that used by a man who had gonorrhœa, for washing the discharge away	R.
119	F.	15½	20.8.87	St. Thomas's p. 105	2½ months	Mr. Nettleship	—	Gonorrhœa present	R.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
3 weeks	R. C. perforated lower part. Lymph in A. C. Conj. thick granulations. L. conj. thick granular. Eversion. C. yellow	A. N. x, followed by xx, and the mitigated stick. After a month, L. excised. Some months later, extraction of R. lens with moderate result	—	Perforation both C. L. excised. Later, R. $\frac{20}{200}$.	
4 weeks	Swelling of lid, solid chemosis. C. opaque, flattened	A. N. mit. stick to lids. Iodoform. Carbolic lotion, 1 in 80, frequently	Yes	Excised.	
18 days	Swelling, discharge not free, stringy. Severe chemosis. Linear semicircular deep ulcer, upper part in each	Quinine lotion, gr. v, kept applied as a wet dressing. A. N. mit. as well	—	R. and L. C. did not perforate. Attended as O. P. and had lids brushed with A. N. for four months.	
R. 2 weeks, L. 1 day	R. severe chemosis and discharge. General haze of C., small ulcer above. L. free mucopurulent discharge. C. bright	Quinine lotion, gr. v, as compress. Lot. acid bor., 4 per cent. syringed every 4 hours. A. N. mit. daily	—	R. and L. recovered. Attended as O. P. for six weeks.	
5 days	Swelling of lids, chemosis, purulent discharge. C. n.	Lot. quin. sulph. gr v. A. N. x later. A. N. mit. and A. N. x for a week	—	Recovered	Gon. rheumatism.
4 days	Dusky, soft, swelling of lid, chemosis, free discharge. C. ulcerated, lower part	A. N. xx daily. Lot. acid bor. half hourly	—	C. perforated, but A. C. reformed. Lids left granular on discharge.	
1 week	Some chemosis, moderate swelling and discharge. C. clear	A. N. mit. daily. Lot. A. B. half hourly	Yes	Cured.	
R. 4 days, L. 4 days after admission	Swelling of lid and conjunctiva. C. clear	A. N. mit. daily in morning. Iodoform puly. Lot. acid bor. half hourly. A. N. xx at night	Yes	R. and L. cured	Attack in L. never bad. In spite of shield, L. infected.
—	Much conjunctival discharge and swelling. Cornea hazy below, probably ulcerated	Zinc sulph. gr. ii, bis die. A. N. xx once a day. Washed every half hour. Later, L. had slight sticky discharge under the shield	Yes	R. excised. L. well	Sl. conjunctivitis in L.
5 days	Swelling of lids, chemosis, purulent discharge. Cornea infiltrated lower part	Lot. hyd. perchlor $\frac{1}{3500}$ every hour. A. N. xx, bis die	Yes	Ulcer healed. Opacity left below.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
120	F.	19	6.3.88	St. Thomas's Ward notes, p. 34	—	Mr. Nettleship	—	Gonorrhœa present	Both
121	F.	—	—	Moorfields I.P. 1122	13 days	Mr. Wordsworth	G. H. B.	Caught from her child	R.
122	F.	—	7.3.80	Moorfields I.P. 290	25 days	Mr. Wordsworth	G. H. B.	Nursing a baby with ophth. neonat.	Both
123	M.	5	31.7.81	Moorfields I.P. 1003	23 days	Mr. Tweedy	W. J. M.	Inoc. from child with ophthalmia neon.	L.
124	M.	34	15.8.81	Moorfields I.P. 1008	25 days	Mr. Tay	W. A. F.	—	R.
125	F.	22	10.5.81	Moorfields I.P. 552	20 days	Mr. Lawson	W. J. M.	—	—
126	F.	11	22.4.82	Moorfields I.P. 597	33 days	Mr. Wordsworth	W. J. M.	—	Both
127	F.	—	21.8.81	Moorfields I.P. 1002	33 days	Mr. Streatfeild	W. A. F.	—	Both
128	F.	4½	28.7.87	Moorfields I.P. 1240	1 month	Mr. Silcock	E. T. C.	Vaginitis 10 days	Both
129	M.	12½	3.7.82	Moorfields I.P. 1008	14 days	Mr. Adams	M. J. S.	—	R.
130	F.	23	1.1.83	Moorfields I.P. 2	21 days	Mr. Tay	M. J. S.	Probably gon.	R.
131	M.	21	30.12 82	Moorfields I.P. 1865	41 days	Mr. Tay	M. J. S.	—	Both

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
3 weeks	R. completely opaque except narrow rim. Much swelling of lids and discharge. L. C. gone	A. N. mit. Absolute alcohol to dried lid. Lot. hyd. perch	—	Both completely lost.	
1 month	Injection and brawny swelling of conjunctiva. Deep excavation of whole corneal margin with haze running up to centre, rest of C. clear	Lot. acid carbol. 1 in 40 frequently. Lot. acid carbol. 1 in 20, 6 in die. After paracentesis for hypopyon, atropine and leeches	—	Cornea perforated. Iris prolapsed, but ulcers healing and C. clearing when discharged at own request.	
R. 3 days L. 1 day	Swelling of lids. C. hazy below. Hypopyon 2 days after adm. L. slight injection	Argent. nit. Zinci chlor. gr. ii. Mist. quin.	—	R. and L. good result. No details.	
10 days	Profuse purulent discharge. Cornea sloughed	Lot. acid carb. 1 in 20. A. N. every day	—	Cornea perforated, vitreous presented and was cut off.	
—	Chemosis. Infiltration of cornea beginning	Lot. quininæ, gr. iv. Gutt. eserini, gr. i, every hour. A. N. x, bis die, scarification	Yes	Cornea gone, Iris covered by mass of exudation.	
14 days	Swelling of conjunctiva. Cornea opaque, red. Purulent disch.	Lot. acid carb. 1 in 40, 4 in die. Ung. iodoformi, gr. xx	—	Cornea clearing.	
—	Great œdema of lids. R. C. steamy	Lot. hyd. perch. gr. i, Iced compress. Ung. iodoformi. After 3 days A. N. x, bis die, Lot. quin. R. canthotomy to everted lid	Yes	R. C. perforated Ant. synechia. L. C. clear	L. E. inoculated in spite of Buller's shield, 4 days after admission.
3 days	Both chemosis. Pur. disch. Cornea clear	Lot. acid carb. 1 in 20, Gutt. eserini gr. ii. A. N. gr. xx	—	R. cornea perforated, L. clear.	
Both 3 days	Lids swollen, conjunctiva swollen, congested. Purulent discharge, C. ulcerated	Lot. hyd. perch. 2nd hor. A. N. xx daily. Vaginitis treated. After C. perforated prolapsed iris cut off	—	One C. perforated, one not	Eyes frequently red and irritable.
1 week	Purulent disch.	Peroxide of hydrogen lotion. Ung iodoformi. Saemisch section of cornea after infiltration of C.	—	C. ulcerated.	
2 days	Chemosis and purulent disch. C. sl. hazy	Quin. sulph. gr. ii, acid bor. gr. xv, Ung. iodof. Ice compress. A. N. x daily	—	C. perforated.	
R. 11 days L. 9 days	R. chemosis, disch. C. sloughy. L. chemosis, C. perforated, prolapse of iris	Lot. quininæ, gr. iv, every hour. Quinine compress. A. N. x daily	—	Both corneæ perforated, sloughy.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
132	M.	3½	16.8.83	Moorfields I.P. 1352	19 days	Mr. Adams	W. O. M.	No cause known. Tenotomy done 8 days before	Both
133	F.	29	20.8.83	Moorfields I.P. 1358	12 days	Mr. Adams	W. O. M.	Mucocele operated on 1 week ago	R.
134	M.	4	14.9.83	Moorfields I.P. 1403	20 days	Mr. Adams	M. J. S.	—	Both
135	M.	20	11.2.84	Moorfields I.P. 229	9 days	Mr. Adams	J. B. L.	—	R.
136	M.	34	21.10.84	Moorfields I.P. 1561	22 days	Mr. Adams	E. H.	—	Both
137	F.	13	9.4.83	Moorfields I.P. 618	35 days	Mr. Lawson	M. J. S.	—	R.
138	F.	34	18.1.84	Moorfields I.P. 105	8 days	Mr. Tay	J. B. L.	—	Both
139	F.	20	2.8.84	Moorfields I.P. 1165	7 weeks	Mr. Nettleship	E. H.	—	—
140	M.	9	13.12.84	Moorfields I.P. 1923	5 weeks	Mr. Nettleship	E. H.	Caught from baby with ophth. neon.	R.
141	F.	47	31.12.84	Moorfields I.P. 2010	22 days	Mr. Nettleship	E. T. C.	Caught from baby with ophth. neon.	L.
142	M.	16	3.8.86	Moorfields I.P. 1241	14 days	Mr. Tweedy	E. T. C.	No history	R.
143	M.	38	20.3.86	Moorfields I.P. 832	16 days	Mr. Tay	E. T. C.	?	Both
144	M.	37	19.1.86	Moorfields I.P. 2	17 days	Mr. Lawson	E. T. C.	—	Both

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
—	Much chemosis, purulent discharge. C. clear	A. N. mit. stick. Lot. quininæ every half hour. Ice compresses constantly. C. became steamy	—	Both corneæ eventually clear	Infection occurred after tenotomy. R. followed 3 days after admission.
1 day	Much chemosis, purulent discharge. C. clear	Lot. acid bor. every half hour. Pulv. acid bor. to be dusted in daily. A. N. mit. daily	—	Ulcer formed below, which healed.	
—	Moderate discharge and injection, corneæ hazy	Condy's fluid, every half hour. A. N. xx daily	—	Both corneæ pannus.	
2 days	Slight swelling of lids, no chemosis, much discharge, extensive shallow ulcern. up and in	Ice. Lot. A. B. A. N. x. Iodoform.	—	Disch. ceased. Deep clear ulcer.	
10 days	Much inject., whole R. C. hazy, crescentic ulcer above. L. ulcer above	A. N. x. After perforn. of L. Ung. atrop.	—	L. perforated above, R. not perforated.	
3 days	Conjunctiva swollen, free discharge. C. clear, but not brilliant	A. N. mit. daily. Lot. hyd. perch. gr. i, daily by H. S. Lot. acid carbol. After prolapse of iris, atropine	—	C. perforated. Iris prolapsed	Slight injectn. of L. while in Hospl.
5 days 2 days	Muco purulent disch. R. ulcern. and infiltr. of C. L. C. clear	Gutt. zinci chlor. gr. ii	—	R. cornea infiltrated. L. C. clear.	
2 days	Swelling of lids, purulent discharge. C. milky, infiltrated	A. N. xx. Canthotomy under $CHCl_3$. Acid bor., 2nd hor. Ice constantly	—	Cornea sloughed, prolapse of iris.	
4 days	Chemosis discharge, large superfl. ulcer of C.	Hot boracic acid, every three hours, washed. A. N. xx to lids, under $CHCl_3$. Quinine lot. every hour	Yes	Cornea sloughed, excision.	
3 weeks	Intense congest., ulcer of C.	Lot. acid bor. every half hour. Zinci chlor. gr. ii, ter die. A. N. xx, ter die	Yes	C. perforated.	
—	Much injection, purulent disch. C. ulcerated, hypopyon	Zinci chlor. gr. i, every hour. A. N., gr. xx, once; ulcer perforation prolapse—eserine	Yes	Excision.	
8 days 5 days	Injectn. Purul. discharge, swelling. Large ulcer lower part of C.	Zinci chlor. gr. i. Ung. acid bor. Mist alb. A. N. xx, once a day	No	R. and L. recovery	Ectropion of lower lid, treated by stitches.
—	Lids swollen and red, purulent disch. from both. C. steamy	Zinci chlor. gr. i, every hour. A. N. xx, bis die. Mist. alb. Hypopyon and iritis followed, hot foment. and atropine	—	R. and L. cured.	

No.	Sex.	Age.	Date of admission.	Reference.	Duration of stay in hospital.	Surgeon.	House surgeon.	Cause. Duration of gonorrhœa on admission.	Eye.
145	M.	25	29.10.88	Moorfields I.P. 1805	3 weeks	Mr. Lang	C. H. W.	—	R.
146	F.	15	3.12.88	Moorfields I.P. 2047	1 month	Mr. Lang	C. H. W.	—	R.
147	F.	3	10.5.88	Moorfields I.P. 738	11 days	Mr. Lawson	C. H. W.	Vaginitis and vaginal discharge	R.
148	F.	5	15.9.88	Moorfields I.P. 1519	4 weeks	Mr. Hulke	C. H. W.	Vaginitis, &c., 1 month	Both
149	M.	50	4.12.88	Moorfields I.P. 2059	7 weeks	Mr. Gunn	C. H. W.	—	L.
150	F.	30	30.9.89	Moorfields I.P. 1756	3 weeks	Mr. Lang	C. H. W.	Unknown. Ill health generally	R.
151	M.	2½	2.8.89	Moorfields I.P. 1451	2 weeks	Mr. Couper	C. H. W.	Unknown. Child very delicate	L.
152	M.	35	25.3.89	Moorfields I.P. 498	3 weeks	Mr. Tay	C. H. W.	—	R.
153	F.	19	15.10.89	Moorfields I.P. 1883	—	Mr. Silcock	C. H. W.	—	L.
154	M	20	17.6.90	Moorfields I.P. 946	22 days	Mr. Lawson	D. G.	Unknown	L.
155	F.	63	25.7.90	Moorfields I.P. 1158	10 days	Mr. Lawson	D. G.	Unknown	R.
156	F.	26	28.1.81	St. Thom., Notes, p. 10	5 weeks	Mr. Nettleship	—	Unknown	Both
157	M.	11	24.3.85	St. Thom., Notes, p. 74	1 month	Mr. Nettleship	—	Unknown	L.
158	F.	6	21.1.85	St. Thom., Notes, p. 20	6 days	Mr. Nettleship	—	Copious discharge from genitals, 4 weeks	R.

Duration of ophthalmia on admission.	Condition of eyes on admission.	Treatment.	Buller's shield.	Final condition.	Remarks.
7 days	R. much swelling of lid. Conj. rough. False memb. on lids. C. hazy. L. conjunctiva injected	Lot. A. B. A. N. xx. Later lot. hyd. perchl. Ulcer of C., treated by galvano cautery	—	Ulcer healed, recovery.	
3 days	Much swelling, muco-pur. discharge. C. clear	A. N. xx daily. Lot. A. B. Ulcer formed, galvano cautery	—	Recovery.	
—	Purulent disch. C. infiltrated, all but sloughed	Lot. A. B. Ol. morrhuæ gr. ii. A. N. x daily	—	Corneal nebula.	
R. 10 days L. 1 day	R. much discharge. C. partly sloughed. L. sl. disch. C. clear	Lot. A. B. Gutt. zinci chlor. A. N. xx	—	R. excised. L. cured.	
6 days	Purulent discharge, swelling, chemosis, small perf. ulcer, iris prolapsed (?)	Lot. A. B. A. N. xx and later, stick. Iridect. after 1 mo. followed by more pain, excised	—	Excised.	
1 week	Chemosis, curdy deposit on lids, no membrane, C. ulcer below, misty generally	Lot. hyd. perch. frequently to lids. Lot. A. B. for washing out 6 in die. Lids became granular	—	C. perforated.	
—	Much swelling of lids, purulent discharge. Small ulcer above	Lot. A. B. sæpe. A. N. x for 2 days after. Zinci chlor. gr. ii, bis die	—	Ulcer healing.	
10 days	Much swelling lids and conjunctiva, purulent discharge, Small ulcers at margins	A. N. xx. Ung. iodof. Lot. A. B., but no improvement. Then esreine with rapid cure	—	Cured.	
—	Œdema of lids, purulent disch. C. misty below	A. N. xx ter. Lot. hyd. perch., 6 in die	—	Cured.	
2 days	Much œdema of lids, hard œdema of conjunctiva. Profuse discharge. C. clear	Irrigation with $\frac{1}{5000}$ perchloride Gutt. zinci chlor.	Yes	Eye perforated.	
7 days	Solid chemosis, profuse thin milky discharge, C. roughened, almost covered	Not noted except leeches, after perforation, excision	—	Excised.	
R. 9 days L. 3 days	Swelling both lids, chemosis. Thin purulent discharge. R. C. opaque generally; upper outer part sloughy	Lot. ac. carbol. 1 in 20 every half hour. Gt. atropin. After one week mitigated A. N., prolapse of R. iris had already happened	—	L. recovered after 7 months. R. excised.	
9 days	Much discharge, chemosis. Large perforn. of C.; over greater part only Descemet's memb. left	A. N. mit. daily. Zinci sulph. gr. i.	Yes	Excised.	
—	Discharge. Thickening of conjunctiva. C. normal	A. N. x daily. Zinci sulph. gr. ii.	No	Cure'.	

ON A CASE WITH A TUMOUR IN EACH ORBIT. DEATH. NECROPSY.

By E. Treacher Collins,

Curator of the Museum.

The Case reported in this paper was under the care of Mr. Gunn at the Moorfields Hospital, who has permitted me to publish it and to make use of his clinical notes.

It presents several points of interest. First, the presence of separate tumours in the two orbits. Second, the absence of any general symptoms until a short time before death, while most of the organs of the body had deposits in them. Third, the extensive masses of growth in the abdomen around those vessels which go to form the umbilical cord. Fourth, the absence of any enlargement of the lymphatic glands in the external parts, such as the neck, axilla, and groins, and the extensive involvement of those in the abdomen and thorax.

M. Gayet, in a paper entitled "Sur les tumeurs symétriques des deux orbites et leur caractère symptomatique," records a case of a man aged 70 who had tumours in both orbits and who died of pleurisy. On microscopical examination the tumours proved to be lymphomata. He has also collected four others of apparently a similar nature to his, recorded by Otto Becker and J. Arnold, Leber, Osterwald and Reymond. In Leber's and Osterwald's cases there was found to be a large increase in the number of the white corpuscles of the blood. Leber's case exhibited symptoms of growths in the liver, spleen, and kidney. In Osterwald's a post-mortem examination was made, and tumours of the dura mater, brain, pleura, and medullary tissue of the bone, &c., were discovered. In Gayet's own case the post-mortem examination was incomplete, but from the nature of the pleural lesions and

the way in which the patient succumbed, he infers that there was a similar generalisation of the disease.

Becker and Reymond's cases were operated on apparently successfully. Becker took the tumours to be hypertrophied lachrymal glands and removed them. Two years later there had been no recurrence.

At a meeting of the Ophthalmological Society in June, 1888, Mr. Silcock showed a girl æt. 9 with tumours in both orbits, which he had incised and partly removed. The microscopical appearances of the growths were described as those of round-celled sarcoma. He has kindly allowed me to add the following further account of this case:—

She was operated on on May 24th, 1888. After this the eyes continued gradually to become more proptosed. The left cornea ulcerated and the eye suppurated. It was excised on August 10th, 1888, for the relief of pain. Her general health continued good, and no secondary growths were observed up to the time of her discharge from the hospital on December 7th, 1888. On October 11th, 1891, Dr. A. E. Bucknell writes: "I have seen Eliza G. to-day. Her general health is good, very much improved to what it was when I first saw her, she is fairly rosy, fat, and growing well, and not so morose as she was. The remaining eye is protruded from the socket, so that the lids when closed do not cover the eyeball by perhaps $\frac{1}{8}$th inch. I do not think this more than it was, if so, but to a very slight extent; she does not suffer from headache or any other cerebral symptoms."

Maud B., æt. $1\frac{3}{4}$ years, was brought as an out-patient to the Moorfields Hospital on January 9th, 1889, on account of the prominence and displacement of her left eye. This the parents stated they had noticed for the first time three weeks previously.

The child did not appear to suffer any pain, and seemed to see quite well with both eyes. The father and mother were healthy; there was no history of consumption or of other diseases in their families. They had had five children.

The first was born dead.

The second was born at eight months, and only lived three weeks.

The third, aged 6 years, was strong and healthy.

The fourth was the patient.

The fifth, aged 7 months, was healthy.

Looked at from the front, the left eye was seen to be pushed forwards and somewhat outwards and downwards. The lower lid just reached the lower margin of the cornea. When the child kept the eye open naturally, the upper lid covered the upper margin of the cornea for about 1 mm.

In the right eye the upper and lower corneal margins were well covered by the lids. The palpebral fissure was obviously longer in the left eye than in the right, but accurate measurements were impossible. The ocular movements were good. The pupils were equal in size, and active to light. The tension was normal in both. There were some distended veins on the conjunctiva in the left. Upwards and inwards, extending towards the corresponding angle of the orbit, was a smooth subconjunctival swelling, of a reddish-purple colour. It apparently got thicker above, and at its broadest visible part was about the breadth of a sixpence. When examined from behind and above, while the child looked straight forwards, the upper half of the left cornea could be seen in its whole extent.

The father states that the left eye is not quite closed when she is asleep. Part of the posterior surface of the globe could be felt by the finger.

The fundus of the eye was apparently normal, but examination was very difficult. The veins seemed rather full, but not engorged.

January 23rd. The prominence seemed somewhat less, otherwise *in statu quo*. On ophthalmoscopic examination under a mydriatic, the fundus was found to be normal.

February 6th. The globe was not so prominent. The subconjunctival growth was somewhat lighter in colour, and flatter. The father said the child's general health was not so good as formerly. She seemed languid at times, and her appetite was bad. No abnormality of the fundus was found. The vision of the proptosed eye seemed good.

She was admitted into the hospital on March 13th, when

the mother stated that for about the last ten days she had complained of pain in the stomach, and on passing water. She had no difficulty in passing water, but apparently it caused her pain. She had also been sick four times, and was unable to take food. Her abdomen had become swollen and hard. There was now also a swelling in the right orbit, displacing the eye downwards, similar to that in the left.

On March 15th her condition was worse; there was more distension of the abdomen. Her breathing became much embarrassed. She constantly cried with pain, and could take no food.

She died on March 17th.

Post-mortem examination made twenty-one hours after death. Body well nourished, rigor mortis marked. Abdomen much distended, measuring at the level of the umbilicus, 22 inches in circumference; at the ensiform cartilage, 22½ inches; and midway between these two points, 23½ inches. The outline of the liver can be plainly felt through the abdominal wall; it appears enlarged. From the notch between the right and left lobes a hard mass is felt projecting downwards. Hard masses are likewise felt through the abdominal wall, starting from the umbilicus and passing down to the pubes, and to the iliac fossa on each side. Both eyeballs are proptosed, and a soft mass is felt at the posterior part of each orbit. The fornix of the conjunctiva in both eyes at the upper and lower parts is of a mottled-purple colour.

Thorax.—There is considerable adhesion of the pericardium to the chest walls. There are no pleuritic adhesions. Each pleura contains a large quantity of turbid, straw-coloured fluid. Running up the anterior mediastinum, and extending laterally on both sides at the anterior and upper border of the diaphragm, is a firm nodular mass. The pericardium is much thickened; its inner surface is smooth, and apparently healthy.

Heart.—At the apex of the left ventricle are two firm masses of yellowish colour, the size of marbles. The lining membrane of the right auricle and ventricle, and the tricuspid valve, appear healthy. Forming a projection in the wall of the right ventricle, just below the orifice of the pulmonary artery, is a rounded mass, which considerably constricts its lumen. The margins of the mitral valves are rough and granular. The two

masses at the apex of the heart do not extend into the cavity of the left ventricle. On section they appear as yellowish-white circular bodies, sharply defined from the red muscular tissue.

Lungs are both collapsed and firm, crepitating on pressure only at the margins. On the surface of the lower lobe of the left are two or three scattered nodules the size of hemp seeds. In the right these nodules are more numerous; there is a cluster of them at the apex.

The bronchial glands are enlarged and firm, on section they are of a shining yellow colour.

Abdomen.—Attached to the umbilicus and passing down from it on the inner surface of the abdominal wall, is a firm nodulated mass expanding as it passes down, and arranged in the form of three thick cords. The peritoneum covering the mass is of a mottled colour having various sized purplish patches in it. On section of this mass there is seen in the centre of each cord a white spot, which is the cut end of a fibrous band running through each of them (? obliterated hypogastric arteries and urachus).

Passing along the free margin of the suspensory ligament of the liver is another thickened cord surrounding probably the umbilical vein. The peritoneum lining the abdominal walls has numerous patches and spots of hæmorrhage in it, and is infiltrated with firm nodules of various sizes, some as large as a walnut. The transverse meso-colon, the small omentum, and the gastro-splenic omentum are especially full of growths. There is no fluid in the peritoneal cavity.

Liver is somewhat enlarged, no growths are found in it. There is a considerable mass of growth surrounding the ductus venosus right up to its junction with the inferior cava.

Spleen has several scattered nodules in it of a shining white colour, sharply defined from the surrounding gland tissue.

Kidneys.—Left enlarged about double the size of the right. Pelvis and calices much dilated. An ill-defined hard nodule at the centre of the outer border, and another at the lower angle. Pelvis of right also dilated, it contains one hard nodule.

Large Intestines along their whole length are infiltrated with numerous nodules of growth, and present a peculiar beaded appearance. The vermiform appendix is thickened and very hard.

Uterus is enlarged and infiltrated with nodules of new growth. It rises some distance above the bladder well into the hypogastric region. It and its appendages are firmly fixed. Its round ligaments pass forwards as thick cords.

Cranial Cavity.—Brain and membranes are apparently healthy, except at the sphenoidal fissures, and across the lesser wings of the sphenoid bone, where the dura mater is thickened and adherent.

Orbits.—The periosteum of the left is adherent to the roof. Beneath the levator palpebræ and superior rectus muscles, surrounding the optic nerve above, and on its outer and inner sides, and extending forwards intimately adherent to the sclerotic though not perforating it, is a hard mass of new growth. Anteriorly it is only covered by the conjunctiva. It is quite separate from the lachrymal gland, which appears healthy. On the inner side of the orbit below, and outside the superior oblique muscle is a separate firm mass. On section the new growth is of a mottled red and pale yellow colour.

The right orbit, only partly opened, contains a growth similar to that described in the left, along its inner wall.

The optic nerves and commissures appear healthy. The lesser wings of the sphenoid bone are soft, of a reddish colour, and break down very easily when touched with the forceps.

Microscopical Appearances.—Sections of the new growth around the ductus venosus show it consists of a number of small nucleated cells of irregular and various shapes closely packed together. In some places delicate strands of fibrous tissue are seen passing between. The cells in parts show a tendency to an arrangement in parallel rows.

Sections of the growth from the orbit present a very similar structure. The cells are mostly round in parts, arranged in masses with hardly any inter-cellular substance, in others the strands, of a delicate fibrous stroma, run in parallel lines with rows of cells between them.

The optic nerve and commissure do not show any cellular infiltration.

Portion of the lesser wings of the sphenoid bone softened with nitric acid, show numerous cells similar to those in the new growths between the trabeculæ of the bone.

Contrasting the above case with those already referred to, it will be seen that it resembles them in having separate tumours in the two orbits; also in the microscopical characters of the growths, which were those of lymphatic gland tissue. Like Gayet's and Osterwald's cases it ended fatally, and like them and Leber's it had tumours of a similar character in other organs.

Unfortunately no microscopical examination was made of the blood to see if the number of its white corpuscles was increased.

The ages in this group of cases presents considerable diversity, thus, Gayet's was 70; Reymond's, 57; Leber's, 48; Becker and Arnold's, 33; Silcock's, 9; Osterwald's, $4\frac{1}{2}$; and the present case, youngest of all, $1\frac{3}{4}$.

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